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SIZING DETERMINATION FINAL REPORT

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The objective of this effort was to conduct a sizing study which would result in the development of non-objective sizing device(s) for the M17 and the XM40 masks. Sizing parameters were established and measuring devices were fabricated to improve the precision and accuracy of measuring facial characteristics. ILC conducted an in-house test to comparatively examine the methods of sizing determination, and CRDEC conducted a combined anthropometric/protection factor study. Analysis of both sets of data for the aforementioned tests by Battelle, CRDEC and ILC indicates that the use of facial measurements does not accurately determine the optimum mask size which provides the best mask fit.

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This study proved that mask sizing from an analysis of facial measurements is not likely to provide a better fitting methodology than the presently used TM method. It was also found that the level of protection is generally unaffected by size. Operational capability is best determined subjectively utilizing the actual mask to be worn. It is therefore recommended that the worn mask in conjunction with a quick leak check be utilized as the optimum method of sizing determination.

PREFACE

The work described in this report was authorized under Contract No. DAAG29-81-D-0010. This work was started in April 1983 and completed in June 1984.

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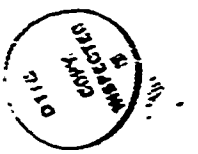

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SUMMARY

The objective of this effort was to conduct a sizing study which would result in the development of nonsubjective sizing devices for the M17 and the XM40 masks. Sizing parameters were established and measuring devices were fabricated to improve the precision and accuracy of measuring facial characteristics. ILC Dover conducted an in-house test to comparatively examine the methods of sizing determination, and CRDEC conducted a combined anthropometric / protection factor study. Analysis of both sets of data for the aforementioned tests by Battelle, CRDEC, and ILC indicates that the use of facial measurements does not accurately determine the optimum mask size which provides the best mask fit. This study proved that mask sizing from an analysis of facial measurements is not likely to provide a better fitting methodology than the presently used TM method. It was also found that the level of protection is generally unaffected by size. Operational capability is best determined subjectively utilizing the actual mask to be worn. It is therefore recommended that the worn mask in conjunction with a quick leak check be utilized as the optimum method of sizing determination.

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SIZING DETERMINATION FINAL REPORT

1. INTRODUCTION

During 1983, the U.S. Army Chenical Research, Development,ard Engineering Center was tasked under the Commander AMC Initatives to investigate areas in which the XM40 masks could be improved. A program to develop a methodology to objectively size a soldier in the correct mask size was initiated. The program incorporated the services of individuals from three organizations; Mr. George C. Derringer, Batteile Columbus Laboratory; Dr. A. Theodore Steegmann, SUNY at Buffalo, and Mr. Robert C. Wise, ILC Dover. This effort was completed in June 1985 and is detailed in a Chemical Research, Development and Engineering Center (CRDEC) Technical Report entitled "Evaluation of Sizing Techniques for the XM40 Protective Mask" by Donna M. Smith, Linda L. Crawford-Moss, and A. Theodore Steegmann, Jr. Ph.D. The findings of this initial work resulted in the development of an objective method of sizing. However, the method was extremely complicated and not suited for field use.

A second phase was initiated in an effort to determine if a simpler non-subjective method could be developed. The second phase which is covered in this report included a review of the existing data base, a literature review to see if any previous work had been done in this area, and an additional test program to increase the data base from phase one.

The principle reports examined during the literature review concentrated on the Rock Ready Anthropometric Data base and the

"Evaluation of Sizing Techniques for the XM40 Protective Mask (CRDEC-TR-87045), the report generated as a result of phase one of this effort.

Critical sizing parameters were identified and a survey of existing sizing determination tools was conducted. Modification of the existing M17 tool and development and fabrication of landmark finders and tape holders followed.

These tools were then evaluated in a three-phase investigation performed by ILC to determine the ability of technicians to take necessary anthropometric measurements and a protection factor sizing study performed at CRDEC. Data from these studies were analyzed and results were presented in the form of "Box and Whisker" diagrams by Battelle and "Size line" diagrams by CRDEC. These results were reviewed and it was concluded that the optimum method of sizing determination is that described in the current technical manual (TM3-4240-300, Ref. 1).

2. LITERATURE REVIEW

2.1 REVIEW OF CRDEC-TR-87045 REPORT

In this study the innovative idea to use multiple discriminant analysis to determine which linear combinations of facial measurements were the best predictors of mask size was evaluated. The study was conducted using two mask types, Scott and ILC masks. For evaluation of each, 40 subjects were evaluated in small, medium and large mask sizes. Since some subjects were

com to evaluation for both mask types, the total number of subjects was fewer than 80. As a check to be sure this sample population was not typical, measurements were statistically compared to historical data. Although the ranges for the samples were smaller in most cases, the samples were considered to be acceptable. The smaller ranges can be attributed to a higher percentage of females in the sample populations and the predictable consequence of smaller size. For example, in sampling from most distributions, the sample range increases with sample size.

The criterion used to determine whether an acceptable fit had been obtained was the "Best Fit" criterion. This criterion modified the TM fit in the event that the TM fit resulted in unacceptable protection factors.

The results of this work were success rates (i.e., success being assignment of correct size) for the ILC and Scott masks of 84 and 77 percent respectively.

2.1.1 Analysis of CRDEC-TR-87045 Data

As part of the overall program Battelle was tasked to critique the above report and if deemed useful, subject the data to further data analysis. Battelle also subjected the data to discriminant analysis using the same facial measurements. In addition, however, two additional measurements were included, weight to height ratio and facial perimeter (See pages 14-15 for the

location of these points). For the latter, the sum of bitragion crinion and bitragion menton arc was used. This was the better of two alternative face perimeter measurements.

2.1.2 Results of Battelle Discriminant Analyses of CRDEC-TR-87045 Data

The variables used by Battelle in their stepwise discriminant analysis are shown in Table 1. These are the same as used in the above referenced report with the addition of X17, X18, and X19. X18 and X19 are the two alternative facial perimeter measurements discussed above. Tables 2 and 3 present the results of the discriminant analyses for Best Fit and TM fit cases respectively. In each table for each mask the variables are listed in their order of importance. For example, for Best Fit (Table 2) of the ILC mask the most important variable (from the standpoint of usefulness as a predictor of mask size) was weight/height ratio. This single variable resulted in a 61.5 percent correct classification. Addition of menton nasion measurement increased this number to 69.2 percent, whereas the third most important variable, nasion-end-of-bone, reduced percent of classification to 66.7 percent. Such reductions, which do not seem to make sense, are usually the result of intercorrelations among the predictor variables. The other results in both tables are interpretted similarly.

One of the more interesting results of the discriminant analysis for the best fit case was that a discriminant function containing

only two variables, weight/height ratio and menton nasion distance resulted in the correct classification for the ILC mask of greater than 69 percent. Weight/height ratio was also an important variable for the Scott mask, but in this case, was the second most important variable.

TABLE 1. DESCRIPTION OF VARIABLES
(CRDEC-TR-87045, DISCRIMINANT ANALYSIS STUDY)

X1	Maximum Frontal Diameter
X2	Bitemporal Fossa Diameter
X3	Bizgyomatic Diameter
X4	Bigonial Diameter
X5	Interpupillary Distance
X6	Nasal Root Breadth
X7	Nasal Breadth
X8	Nasion Crinon
X9	Nasion-End-of-Bone
X10	Menton Nasion
X11	Bitragion-Crinon
X12	Bitragion-Minimum-Frontal Arc
X13	Bitragion-Menton Arc
X14	Bitragion-Submandibular Arc
X15	Bigonial-Menton Arc
X16	Head Circumference
X17	Wt/Ht
X18	$\sqrt{(X8+X10)^2+X3^2}$
X19	X11 + X13

TABLE 2. SUMMARY RESULTS FOR STEPWISE DISCRIMINANT ANALYSIS (F - ENTER = 2.0) - BEST FIT CASE

Step		Variable	Percent Correct Classification
		A. ILC Mask	
1	X17	Weight/Height	61.5
2	X10	Menton-Nasion	69.2
3	X9	Nasion-End-of-Bone	66.7
		B. Scott Mask	
1	X1	Max Frontal Diameter	48.7
2	X17	Weight/Height	59.0

Discriminant analyses were also run for the "TM" fit case. The variables which entered the discriminant function in this case are shown in Table 3. It is interesting that weight/height ratio was again important for the Scott mask. In addition, the facial perimeter as measured by X11 + X13 was also important. However, neither of these factors were significant in the ILC mask analysis.

The significance of the weight/height ratio is interpreted as being correlated to the amount of fatty tissue on the face which would be expected to impact ease of fitting. Other explanations for the importance of this variable could also be proposed. The ease of collecting weight and height data make this ratio particularly useful for field fitting.

2.1.3 Conclusions of Battelle Discriminant Analysis

Even with the expanded list of variables Battelle was not able to improve upon the discriminant function for "Best Fit" which was developed in CRDEC-TR-87045. The highest numbers for percent correct classification were 66.7 and 59.0 for ILC and Scott masks respectively. The results for "TM" fit were considerably better at 89.7 and 71.7 percent respectively. CRDEC did not run discriminant analyses for TM fit and so comparisons could not be made.

The discriminant analysis results obtained from both assessments suggest that this statistical tool will not improve the accuracy with which mask sizes are assigned. On a more fundamental basis, Battelle's assessment is that discriminant analysis has dubious

merit as a methodological basis for mask sizing. One major problem with it is the primary requirement of discriminant analysis that each subject fall into one and only one category. Although each subject of this study was assigned to only one category, in several cases the assignment was rather arbitrary. For, example, for the subjects tested in Scott masks, 14 out of 40 (35 percent) were cases where any of the three sizes provided protection factors near 20,000 for all three protection factor T tests. For ILC Dover subjects, 12.5 percent were found to have acceptable protection in all three sizes. Therefore discriminant analysis may underestimate the correct classification percentage. This argument, of course, does not take into account the use of the TM fit and comfort factors considered therein as a tie-breaker. Even considering these factors however; it is well known that more than one mask can be acceptable from both protection factor and comfort standpoints. Another objection to discriminant analysis is that linear combinations of facial dimensions are blindly evaluated. It might be the case that ratios, not sums are more appropriate. It is clear that if discriminant analysis is employed it be guided by the expert judgements of an expert in anthropometry.

TABLE 3. SUMMARY RESULTS FOR STEPWISE DISCRIMINANT ANALYSIS - TM FIT CASE

Variables in Discriminant Function	Percent Correct Classification
A. ILC Mask	
X13	51.3
X13, X10	53.8
X13, X10, X15	56.4
X13, X10, X15, X6	76.9
X2, X6, X10, X13, X15	76.9
X2, X6, X10, X14	74.4
X2, X6, X7, X10, X14	89.7
B. Scott Mask	
X19	56.4
X19, X17	56.7
X19, X17, X3	71.8

2.2 CONCLUSIONS: LITERATURE REVIEW

These reports evidence the necessity to eliminate variance among the collection of anthropometric data, and to provide a representative subject population. Recognizing the primary faults with the CRDC-TR-85 survey and other anthropometric studies, modified sizing devices were developed to improve consistency of measurement and test protocol with proper training was established.

3. SIZING DETEPMINATION DEVICES

3.1 CLEAR MASK/CLEAR TEMPLATE

The clear mask (a clear silicone skeleton of the actual mask body) and the clear template were still under consideration as sizing determination devices at the outset of this program. These devices were developed to allow the fitter to visually examine where the mask periphery is in relation to the ectocanthus (outer corner of the eye), tragion (top of ear canal), and the hairline.

Both the clear fitting mask and clear templates were evaluated for ease of use at CRDEC. The following observations were noted regarding the clear mask and the clear template:

Clear Mask:

i) A little hard to center.
ii) Mouth/chin area was hard to see through mask.
iii) Size was not self-evident, and use of clear templates to assign proper sizes was required.
iv) Closely simulates actual mask.
v) Red demarcator lines were easy to see at eye and forehead, not at chin.
vi) Easy to see nose-cup fit, but not periphery/skin contact

(as had been hoped).
vii) Subject could tell by "feel" which one fits best.

Clear Template:

i) Fits periphery less well than clear fitting mask
ii) Should be down-sized 1/2 size (i.e. S/M should be marked M).
iii) Speed and ease of use is superior.
iv) Good visibility in most critical areas.
v) Need for small subjects in final testing is stressed.

The clear mask and clear template were no longer pursued since the sizes of the clear masks and templates were slightly off due to the dissimilar shrinkage factor of the clear material. In addition, the same type of information which could be obtained from a clear mask could be obtained from a regular mask.

3.2 M17 SIZING CALIPER

The M17 sizing caliper was also evaluated during the course of this program by Dr. A. T. Steegmann for its utility in obtaining facial measurements. This caliper was originally used to guage pipes and other pieces of inanimate shop work, and does not adapt gracefully to facial measurements.

The caliper lacks its own scale and consequently, once a measurement is taken, a second step (placing it on a scale) is necessary to get a metric reading.

The arms of the caliper run along the axis being measured when used for face height. For this measurement, it is essential that the arms cross that axis at right angles. Consequently, these calipers are suited to diameters (face width) but not lengths

(face height).

The calipers open and close by means of fine-threaded bolt, (which works very slowly, and is hard to adjust while in place). Regular anthropometric calipers operate by friction, using a set screw if a fixed dimension is desired.

The caliper arms have pointed ends and are very dangerous to use on the human face. This tool was modified by ILC Dover to eliminate the pointed ends (see Appendix A) and was used as an anthropometric tool in the evaluations conducted both at ILC and CRDEC.

In sum, however; these calipers are slow, awkward to handle, dangerous and less accurate than calipers designed for use with human subjects and are not recommended for use in mask sizing determination.

3.3 ANTHROPOMETRIC LANDMARK FINDING INSTRUMENTS AND TAPE HOLDERS

A series of anthropometric landmark finder instruments was developed with two purposes in mind. First, it was hoped that they would reduce between-technician error during the verification experiments. Second, were anthropometric traits to finally be chosen for field application, these simple, fool proof instruments would greatly standardize assignment of masks.

3.2.1 Landmark Finders

3.3.1.1 Prozygion/Mid-Temporal Fossa Finder

The prozygion (PROZ) falls on the height of the cheekbone and the

mid-temporal fossa (TEMF) falls just behind the bony frame of the eye. Both fall on the zone crossed by the mask periphery (see Figure 1). A single instrument can find both points, since it is face size adjusted when placed just at the outer corner of the eye. The distance behind that point which is available for the mask periphery, is limited. Measurements determined that those points fall on a vertical axis exactly 1.5 cm behind the eye corner (see Figure 2). The temporal fossa point is then 1.5 cm above the level of the eye corner, and the cheekbone point is 2.0 cm below it. Curvature of the instrument plate causes it to lie flat against the face. ILC engineers combined this instrument with two others (Sellion Finder; Menthon and Pogonian Finder) into a single unit thereby improving function without changing dimensions (see Appendix B).

3.3.1.2 Sellion Finder

The Sellion, the deepest point in the "saddle" formed by the nasal bones) is hard to locate without good training and anatomical knowledge. This instrument butts up against the frontal bone, thus positioning itself, and eliminates guesswork (see Figures 1 and 2). The hole centered on the curve of the device is consequently positioned correctly, and a mark is made on the skin through that hole.

3.3.1.3 Menthon/Pogonion Finder

This device works on the same principle as the sellion finder. It is pushed up onto the chin at midline. A short flat blade (pushing on the floor of the lower jaw) stops it at the proper

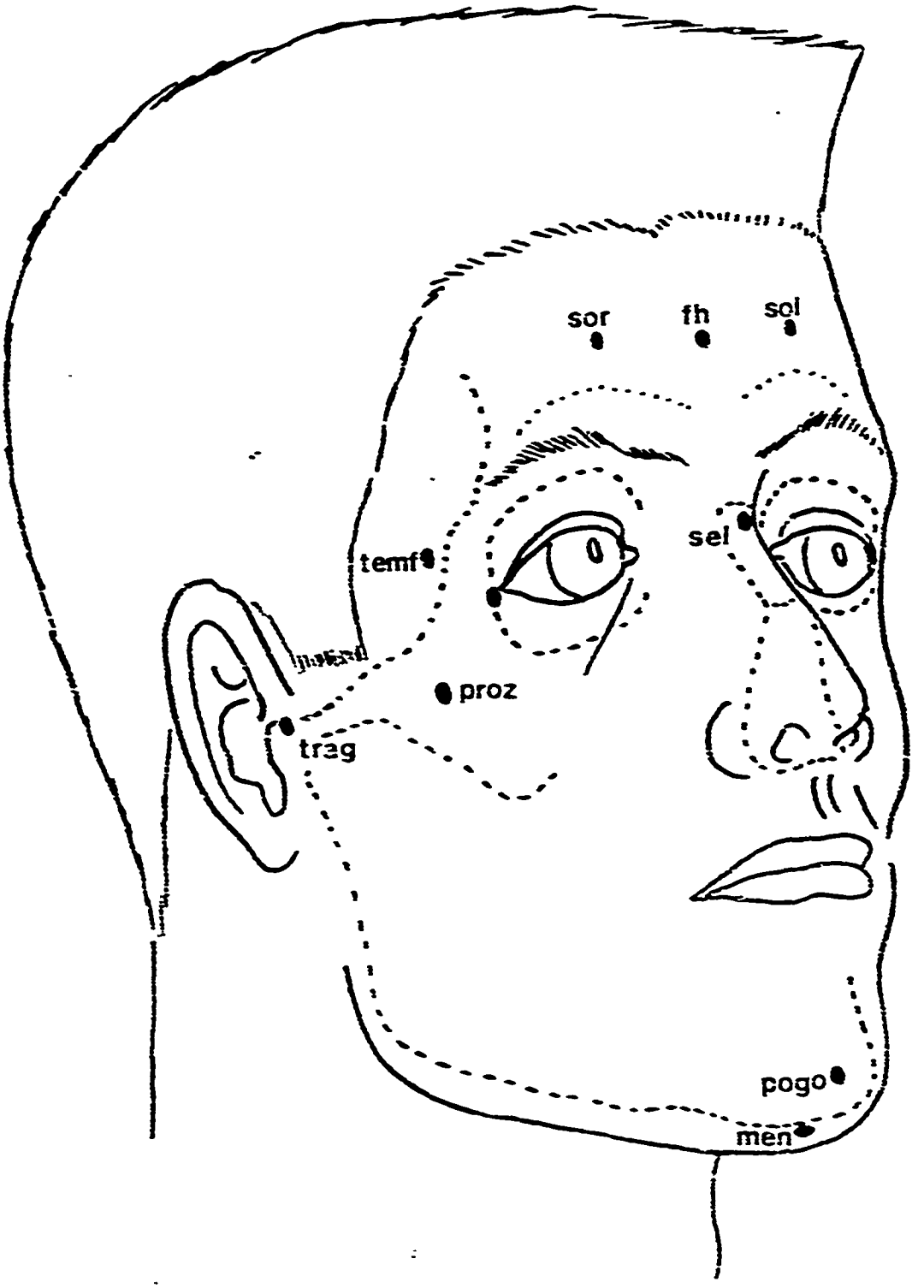


FIGURE 1

FACIAL LANDMARKS

location. Pogonion, the most anterior chin point, and Menton, the most interior chin point, are marked by means of holes properly placed through the instrument.

3.3.2 Other Anthropometry Aids and Specially Designed Instruments

3.3.2.1 Tape Holder

The Tragion point (see Figures 1 and 3) is very difficult for an inexperienced technician to locate properly, and not much better for a professional anthropometrist. Consequently, a device was invented which finds a nearby point automatically. The body of this device is simply a set of stethoscope ear pieces. These fit into the auditory openings and self-adjust to the center of the canal. A tape then runs from one ear-piece, around the chin or forehead, and up to a washer on the other ear-piece. That way, arcs can be taken more quickly, easily, and with equal accuracy to the expert hand held tape method.

3.3.2.2 Metric Template

The object of this device is to get a single, fast easy reading of face circumference at the approximate location of the mask periphery. Using the basic pattern of a Medium Clear Template (which self-adjusts to chin and face), the template strap was cut at midforehead. On one side of the cut was added a bucklelike reading window, and the other side of the strap was increased in length and covered with a metric scale. The device is placed on the face and adjusted so that it conforms approximately to mask periphery location. (See Appendix E, Anthropometric Protocol

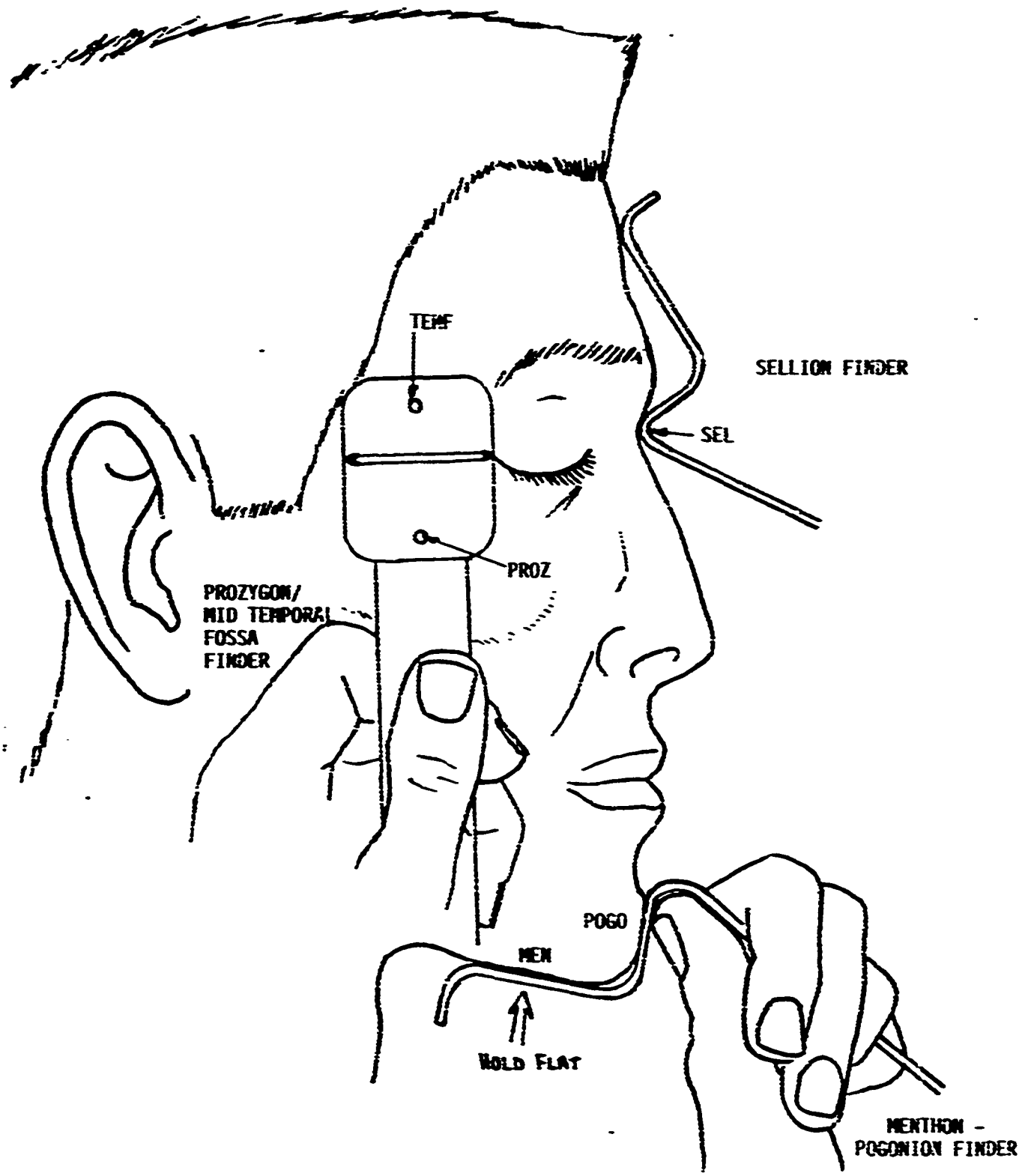


FIGURE 2

LANDMARK DETERMINATION DEVICE

for further details.) A single metric figure is then read off.

3.3.2.3 Gauge

The tool used in M-17 sizing was assessed for its value to XM40 sizing. This simple non-metric caliper was modified at ILC Dover by covering the dangerous points at the ends of the caliper arms with small disks and is discussed in detail in the previous section. All of the devices listed above were evaluated first in the ILC in-house conducted test and utilized in the anthropometric data collection at CRDEC.

4. ILC IN-HOUSE TEST

ILC conducted a three phase test to determine the inherent variability among measurers and to determine the degree of improvement in the accuracy of measurements after obtaining improved landmark devices and proper training by Dr. A.T. Steegmann.

4.1 TEST PROCEDURE

For each phase of the test, four measurers each measured three facial characteristics for a group of 30 subjects. The three measurements, which encompass all of the measuring devices used in the program, include: 1) face height (Menton-Selion); 2) face width (bizygomatic diameter) and 3) posterior jaw (bitragion-submandibular arc). The face height was measured with a sliding caliper which is illustrated in Figure 4. Face width was measured with a spreading caliper which is illustrated in Figure 5.

Posterior jaw was measured with a tape and the process is illustrated in Figure 6. During the first phase of testing measurements were obtained freehand in which no landmark devices were utilized or formal training given. Measurements were located according to both written and pictorial direction. (See Appendix

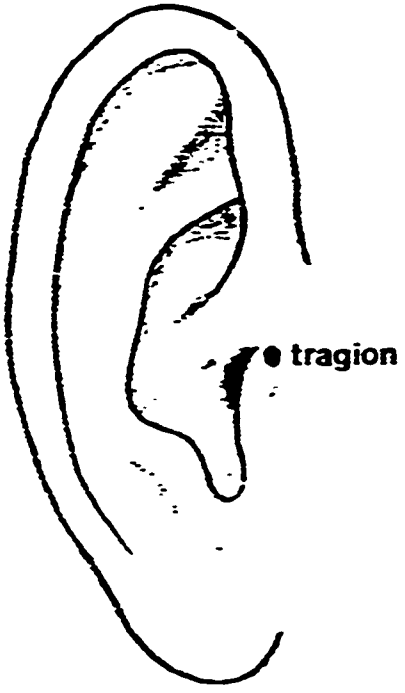


FIGURE 3

TRAGION LOCATION

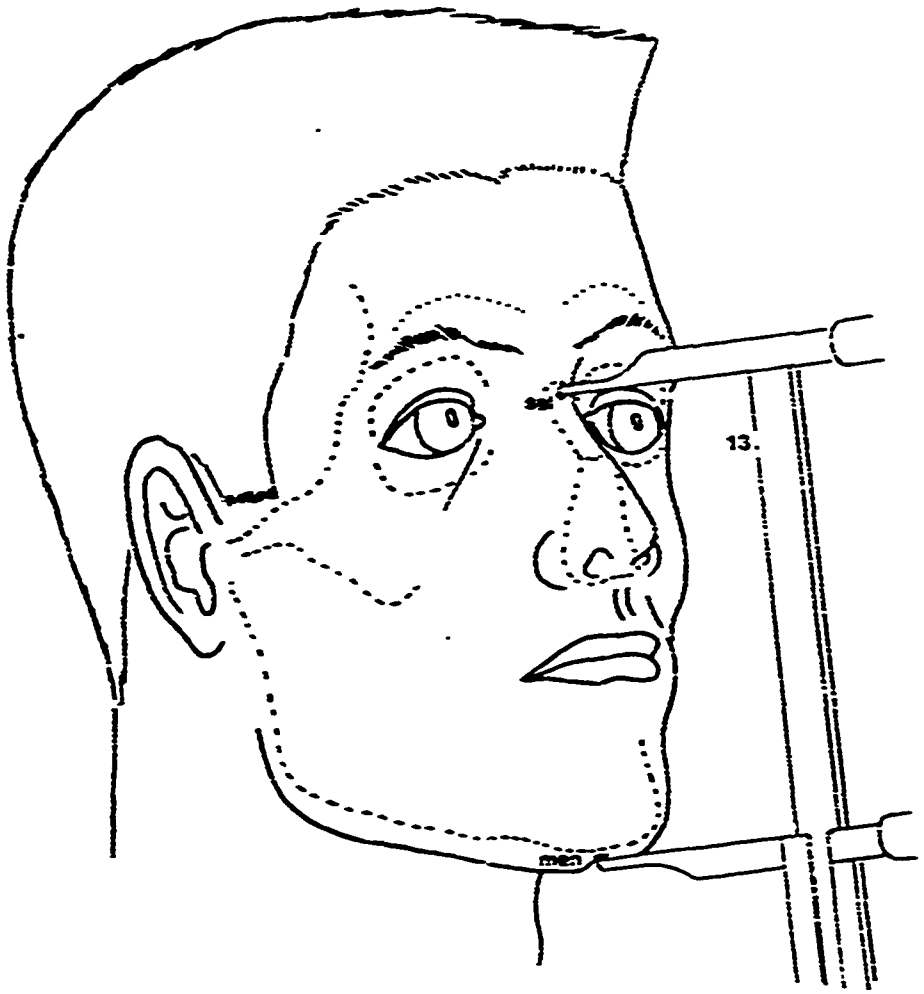


FIGURE 4

FACE HEIGHT
(MENTION SELLION)

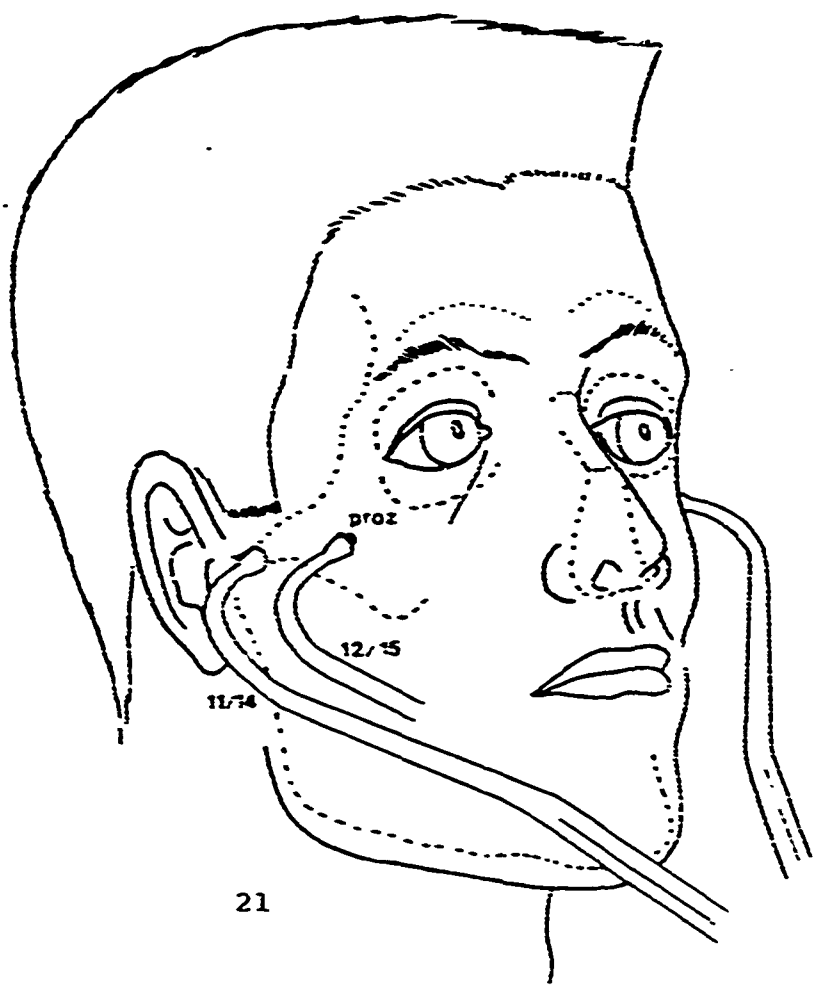


FIGURE 5

FACE WIDTH
BIZYGOMATIC
DIAMETER

D.) During the second phase of testing, measurers were given landmark devices to aide in locating the correct points of measurement. Once again, no formal training was given and use of the devices was learned according to written and pictorial direction. For the third phase of testing, measurers were given formal training by Dr. A. T. Steegmann on the proper use of the landmark tools and measurement technique.

4.2 ILC TEST RESULTS

Raw data is presented in Appendix D in tables. Tables E1 through E12 present the data for each measurer for measurements for all 3 test phases for all 30 subjects measured. Tables E1 through E4 are for face height for measurers 1 through 4 respectively. Tables E5 through E8 are for posterior jaw and Tables E9 through E12 are for face width.

4.3 DATA ANALYSIS BY BATTELLE

Raw data was turned over to Battelle to perform a formal data analysis. It was determined that there is no single best way to analyze the data collected in this study. After careful consider - ation of various alternatives, it was decided to use a two way analysis of variance with the factors, measurer and subject being random rather than fixed factors. The output of such an analysis consists of estimates among subject standard deviation and among measurer standard deviation. Using this conceptual analysis model the four measurers were treated as random selections from among a population of available measurers. Similarly, sub-

jects were considered as random selections from among a population of available subjects. It is realized, of course, that this model does not conform to reality, but it nevertheless, is the most appropriate content with which to obtain what what was needed from the data. It is not unusual to "force fit" an experimental design into the scaffolding of this random model. In most experimental situations, it is impossible to randomly select from among all conceptual candidates. The model, however; does prove useful in spite of such stretching of assumptions.

Discussion of Results

The analysis of variance results are presented in Table 5. The Table entries in the upper section are standard deviations. For example, the first entry, 4.23 is the standard deviation among measurers for face height. Under that value, the 9.36 is the corresponding standard deviation among subjects. A pertinent ratio is the ratio of these two standard deviations. The entry for the second section in the same column, 45, is the measurer variability as a percent of the variability among subjects. In this case the variability among measurers is almost half as large as the variability among subjects being measured. High values for this quantity could be indicative of a measuring process which is inherently of low accuracy. Finally, the calculated value of 6.03 which has not so far been mentioned is an estimate of the inherent scatter in the data after adjustment for subject and measurer effects. The quantity which esti-

mates this error is the product of measurer and subject interac - tions. These interactions are typically assumed to be non-existent so that the number one obtains for the interaction calculation is simply due to random scatter. This is a common assumption in this type of data. This assumption made for this data, replicates by the same measurer(s) on the same subject(s), are required to test the non-significance of this in- teraction and such replications were not available in this study.

FIGURE 6

POSTERIOR JAW CIRCUMFERENCE
(BITRAGION SUBMONDIBULAR)

Overall it appears that of the three measurements, the posterior jaw was most precisely measured as evidenced by the comparatively low values for measurer variability as a percentage of subject variability, namely 30, 26 and 20 percent. The least precise was face width (spreading caliper). Here measurer variability ran from 71 percent to 143 percent of subject variability. The 143 percent value for the landmark measurement is especially surprising since it implies that there is more variability in the measuring process than among the subjects of that process. Face height as measured with the sliding caliper was just slightly more variable than posterior jaw.

It is also interesting to compare the three levels of measurement within each category, namely freehand, landmark and trained landmark. These three categories essentially represent, in order, three levels of training for the measurers. Freehand has least training followed by landmark where facial landmarks are located with special templates followed by trained landmark where landmarks are used and training is given in their proper use. For all three measurements, the error term for landmark is lower than that for freehand indicating that the landmark has removed variability from the system. Trained landmark, however, is smaller than landmark only for face height.

TABLE 5. ANALYSIS OF VARIANCE RESULTS FOR ILC DOVER FACE ANTHROPOMETRIC STUDY

Variance Components	Standard Deviations								
	Faceheight			Posterior Jaw			Facewidth		
	F(a)	L(b)	TL(c)	F	L	TL	F	L	TL
Measurer	4.23	2.99	1.97	6.33	4.84	3.95	3.98	6.57	3.50
Subject	9.36	9.81	8.18	21.45	18.41	19.97	5.48	4.61	4.91
Error (Interaction)	6.03	3.67	3.27	12.00	9.25	10.15	4.44	3.21	4.11
Measurer variability (std. dev.) as percent of subject variability, percent	45	30	24	30	26	20	73	143	71

(a) Freehand.
(b) Landmark assisted.
(c) Trained landmark.

Another way to look at these results is to compare the three categories for the last row. Here for face height and posterior jaw measurer variability decreased when going from freehand to landmark indicating the usefulness of landmark templates for these two measurements. The opposite result for face width is surprising since it indicates that use of the template actually increased the measurer variability relative to subject variability. With training the landmark result fell back to the level for the freehand result.

In conclusion, these results indicate that the variability among the measurers represents a significant percentage of variability of the subject population. Therefore, indicating that the error induced by the variability of the measurer will have a significant impact on the selection of the best fit mask using facial measurements. In addition, use of landmark devices reduces error over freehand measurement, however, it is inconclusive as to whether or not formal training improves variability and reduces error.

5. CRDEC TEST

An anthropometric study and protection factor performance study was conducted in order to determine the combination(s) of measurements to be used to accurately predict the best mask size for a population greater than that which is predicted by the Technical Manual Method. An additional goal of this study was to determine

the most reliable method or technique of obtaining these measurements.

5.1 TEST FACILITY/EQUIPMENT

In order to conduct an anthropometric survey in conjunction with a protection factor performance study, a mobile protection factor chamber was designed and fabricated.

It was the initial intent to conduct the study at Dover Air Force Base, however, lack of participation from the subject population caused termination of testing at this facility. It was then decided that the test would be conducted in Bldg. E5604 Edgewood Area, Aberdeen Proving Ground, MD. The testing was performed by the Individual Protection Division, Physical Protection Directorate, of the Chemical Research, Development, and Engineering Center and personnel of ILC Dover.

5.2 TEST PROTOCOL

Anthropometric and photographic data were collected on each subject by a trained ILC technician. CRDEC personnel then assigned each subject to the optimum mask size according to the standard TM-method, (a subjective evaluation of factors such as peripheral location of the face where the eyes are located relative to the eye lenses, in order to collect protection factor (ratio of outer concentration of contaminant to inside mask concentration of contaminant). In addition, protection factor data was collected while wearing a mask of the next appropriate size. The same protocol was used for the ILC and Scott XM40's, and the Avon S-10.

5.2.1 Test Program

A test population consisting of 114 soldiers was used for this evaluation. The subjects arrived at the test facility in groups ranging in size from 10 to 24 soldiers. Upon arrival at the test facility the subjects were briefed on the purpose of the testing and what was expected of each of them. After the orientation the subjects were sized in each of the mask systems. The sizing involved subjectively determining the correct mask size and also determining the next most likely size that the subject would wear. Once the sizing was completed the subjects received a brief training session to instruct them in the proper donning procedures for each of the mask systems. Once the training was completed the testing began.

The subjects were given a mask which they donned prior to entering the chamber. Since the subjects were only available for a limited time, adequate training was not possible, so CRDEC personnel assisted the subjects in donning the mask to minimize the effects of training and learning. Once the mask was donned the subjects would enter the test chamber and a fit test was conducted. At the completion of each fit test the subjects were photographed from the front and side for a visual record of how each mask fit. During the course of the of the day, subjects would have their anthropometric measurements and bare face photographs taken.

Each subject was tested a total of six times (once in each of the two mask sizes assigned in each of the three mask systems) and sixteen anthropometric measurements were taken. The data was then fed into a computerized data base for analysis and the photographs were compiled into an album for easy reference during the analysis of the data.

5.2.2 Anthropometric Protocol

The anthropometric protocol was developed by Dr. A.T. Steegmann and is detailed in Appendix E. One ILC technician was thoroughly trained in the procedure described in Appendix F and closely supervised during the first day of testing. The same technician collected all anthropometric data.

A total of sixteen anthropometric measurements were collected for each subject and are listed below:

1. Height
2. Weight
3. Adjustable Metric Template Circumference
4. Sub-mandibular Skinfold
5. Bitemporal Fossa [TEMPF] - Minimum Frontal Arc. [Temporal Forehead Arc]
6. Biprozygomatic - Menton Arc [Cheekbone-Chin Arc]
7. Sitragion-Minimum Frontal Arc (Freehand). [Ear Forehead Arc]
8. Bitragion - Pogonion Arc (Freehand). [Ear-Chin Arc]
9. Bitragion - Minimum Frontal Arc (Tape Holder). [Ear-Forehead Arc.]
10. Bitragion - Pogonion Arc (Tape Holder). [Ear-Chin Arc]
11. Bizygomatic Diameter (Calipers). [Face Width]
12. Biprozygomatic Diameter (Calipers). [Cheek - bone Width]

13. Menton Sellion Diameter (Calipers). [Face-Height]
14. Bizygomatic Diameter (Gauge). [Face Width]
15. Biprozygomatic Diameter (Gauge). [Cheekbone Width]
16. Menton-Sellion Diameter (Gauge). [Face-Height]

The actual choice of these measurements was determined by means of their usefulness in previous studies and tests in this series and by the characteristics (periphery, contact areas, nosecup, etc.) of the XM4C.

5.2.3 Corn Oil Test Method

A challenge concentration of approximately 25 mg M- of corn oil in the form of a polydispersed aerosol having a mass mean aerodynamic diameter (MMAD) of 0.5 - 0.6 microneters is generated in a 4 ft x 6 ft x 7.5 ft chamber. The challenge test chamber atmosphere is generated by atomizing the liquid corn oil at room temperature using a Laskin nozzle. The Laskin nozzle produces a course aerosol cloud which is sent to an impactor plate which removes the larger particles and yields an aerosol in the desired particle size range. The aersosol concentration in the chamber is controlled by diluting the concentrated aerosol from the generators with room air. The leakage of aerosol into the respirator is measured by continuously sampling at a rate of 1 liter/min from inside the respirator facepiece. Sampling is accomplished through a length of tubing that connects the sample port in the mask to the photometer. A five-decade light scatter-

ing photometer is used to analyze and quantify the leakage of aerosol into the mask by measuring the amount of light scattered by aerosol particles in the sample stream and converting it to a voltage. The signal is then digitized and recorded on flexible discs.

The leakage of the aerosol was measured while the following exercises were performed:

(a) Normal breathing
(b) Deep breathing
(c) Head movement, side to side
(d) Head movement, up and down
(e) Talking (recite the rainbow passage)
(f) Sight a rifle
(g) Touch floor and ceiling
(h) On hands and knees, look up right and left
(i) Facial expressions (yawn, smile, frown, and rotate the chin)
(j) Normal breathing

Each exercise was performed for one minute.

5.3 TEST DATA

Test data was accumulated by CRDEC (see appendix G) and was sent directly to Battelle for further analysis.

5.4 DATA ANALYSIS

Extensive data analysis was performed in order to determine the ability of the accumulated data base to be utilized for the selection of anthropometrics as sizing determination predictors. A correlation analysis was conducted in order to assess the

relationship of one facial measurement to another. Methods of measurement were examined comparatively using a sensitivity analysis. In additon, a cluster analysis and principle component analysis were performed on the data to determine how well selection of a few key facial measurements will predict mask size.

Prior to conducting any data analysis to select the key anthropometrics, a "correct" or "true mask" size standard was established. Ultimately three different estimates of "correct" size were used: 1) TM, 2) PF, and 3) BF.

TM is the mask assignment made by the standard Army fitting manual (TM3-4240-300- baseline mask size assignment). The main objective of utilizing this standard was to see whether a simple anthropometric method could assign fit more accurately than this method.

PF is the mask assignment made by the maximum protective factor of each mask. Because the top of the range of variation of PF performance could not be recorded on available physiological equipment, this standard is hard to interpret. That is, if a subject achieved protection at a value of 20,000 in both small and medium masks (a frequent occurrence), it is not clear which size is optimum by this method alone.

BF is a combined measure including elements of the preceding two. The "best fit" is one in which the mask periphery fell free of

all hair-lines, in which the nose cup was comfortable, where vision was acceptable, and PF performance was optimum. The problem with BF is that it may be the best overall method, but it is too subtle and multivariate to expect prediction by simple anthropometrics.

Preliminary discriminant analysis was performed on the data in which the TM standard of correct mask size was based on a set of facial measurements. The TM, PF, and BF standards of correct mask size were all used to present the data in the form of boxplots. These boxplots were then used by Dr. A. T. Steegmann to determine S-M-L predictors for the anthropometric measurements. Finally the PF standard was used for a size line analysis in which the PF was optimized for the mask size distribution determined from the anthropometric measurements.

5.4.1 Correlation Analysis of Facial Parameters

The inter-correlations of the 13 different facial measurements were analyzed. All possible correlations are presented in Table 6. Here the facial measurements are shown both as rows and columns. The intersection of a row with a column contains the correlation coefficient (multiplied by 100) between the two vari-

ables corresponding to the row and column labels. For example, the correlation coefficient between skinfold and facesize is shown in the upper most cell and is 0.25 (i.e. table entry multiplied by 0.01 to transform back to 0-1 scale). A perfect linear relationship would result in a coeffiecient of +1 or -1 and the complete absence or a correlation would be indicated by zero. Of course, due to random variability, zeroes and ones are seldom obtained. To get a feel for the significance of the correlation coefficients, one should square the coefficient and multiply by 100. This number is the percentage of the variability in one of the variables which can be explained by the other. For example, a correlation coefficient of +\- 0.5 indicates that 25 percent of the variability in one variable can be explained by variation in the other. A correlation coefficient of 0.9 similarly would indicate that 81 percent of the variability in one variable is explainable by the other,etc... The sign of the correlation coefficient is indicated by the direction of the association. For example, a positive coefficient indicates that as one variable is increased (or decreased) the other variable increases (decreases) .

5.4.1.1 Discussion of Correlation Matrix

An interesting aspect of this table is the relatively low correlation coefficients obtained for the same facial measurements made two different ways. For example, the correlation between the ear-chin arc measured with tape only and tape plus holder is

0.86. Thus 26 percent [i.e. $(1-r)^2 \times 100$] of the variability in one is unexplained by the other. This appears surprising since the only difference is the holder for the tape. A scatter plot of these two variables is shown in Figure 7. Overall the measurement showing lowest correlation with other variables is skinfold. Such low correlations could be due to the skinfold measurement being largely independent of the other measurements which would be a good outcome. The other explanation is that skinfold is not a very reproducible measurement. Other results in this study lead us to accept this as the reason for low correlations. Many of the low correlations shown in this table are for correlations between the various measurements of face width and face height. These correlations are all below 0.4 and indicate that face height and face width tend to be independent of one another. This is probably one of the reasons that face height + face width turned out to be one of the best discriminators for mask size determination. A scatter plot for these two measurements is shown in Figure 8.

TABLE 6. CORRELATION MATRIX FOR FACIAL MEASUREMENTS

	Face Size	Skinfold	TM - Temple-Forehead Arc	TM - Cheekbone-Chin Arc	TD - Ear-Forehead Arc	TD - Ear-Chin Arc	TH - Ear-Forehead Arc	TH - Ear-Chin Arc	SPC - Face Width	SPC - Cheekbone Width	SLC - Face Height	MG - Face Width	MG - Cheekbone Width
Skinfold	25												
TM - Temple-Forehead Arc	44	1											
TM - Cheekbone-Chin Arc	79	26	52										
TD - Ear-Forehead Arc	54	24	66	48									
TD - Ear-Chin Arc	69	37	43	31	53								
TH - Ear-Forehead Arc	54	25	61	45	90	52							
TH - Ear-Chin Arc	63	29	59	31	52	86	52						
SPC - Face Width	40	38	32	43	62	58	58	52					
SPC - Cheekbone Width	42	24	53	58	62	58	57	53	84				
SLC - Face Height	72	-12	40	72	33	49	34	53	13	26			
MG - Face Width	41	37	41	52	59	55	54	56	86	82	20		
MG - Cheekbone Width	49	29	47	55	57	33	50	67	75	87	34	77	
MG - Face Height	75	-4	32	72	30	51	31	47	12	22	87	20	27

Abbreviations: TM = Tape and marker tool
TD = Tape only
TH = Tape and holder
SPC = Spreading caliper
SLC = Sliding caliper
MG = Metric gauge

Note: All entries are correlation coefficients X 100.

FIGURE 7. SCATTER PLOT FOR EAR-FOREHEAD ARC MEASURED WITH TAPE AND HOLDER AND TAPE ONLY

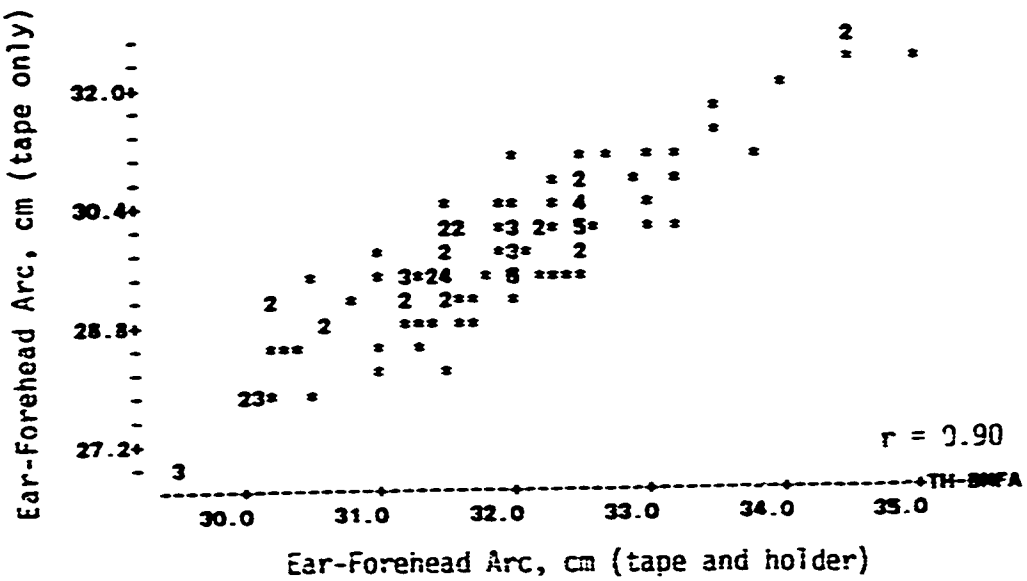
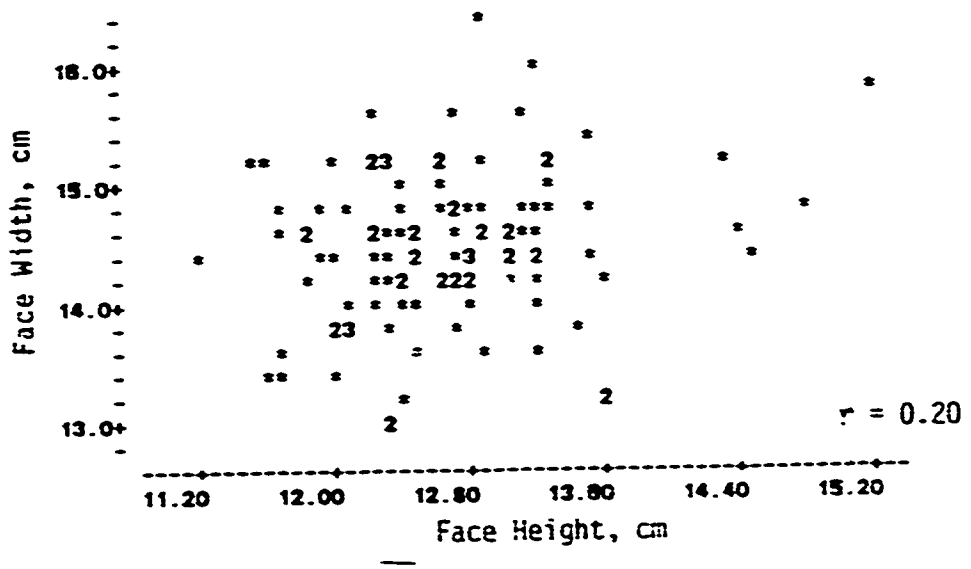


FIGURE 8. SCATTER PLOT FOR FACE HEIGHT VERSUS FACE WIDTH BOTH MEASURED WITH METRIC GAUGE



NOTE: PLOTTED NUMBERS INDICATE NUMBER OF OVERLAPPING DATA POINTS

5.4.2 Sensitivity Analysis

During the course of this program a number of devices for performing facial measurements were utilized. These included (1) metric gauge, (2) spreading caliper and (3) tape with or without a holder. In order to assess which of these was most accurate, Mandel's sensitivity analysis was performed for selected pairs of test. Mandel's sensitivity analysis correctly recognizes that two tests which measure the same underlying quantity should be compared not only on the basis of their standard deviation (i.e. test precision) but must also take into account the comparative range of measurements for tests being compared. For example, suppose test A and test B both measure the same quantity. Of test A exhibited twice the standard deviation (half the precision) as test B it is often concluded that test B is "better". However if the range of measurements obtained for test A is three times greater than that obtained for test B upon measurement of the same specimens, then this must also be taken into account. That is precisely what Mandel accomplishes with his sensitivity ratio. He defined the sensitivity ratio of test A relative to test B as follows:

$$RS(A/B) = (\Delta A/\Delta B) \div (S_A \ / \ S_B)$$

Here $\Delta A/\Delta B$ is the slope of a regression line fitted to data where measurements were made for both tests on each subject. S_A and S_B are the standard deviations of the two tests and come from measurements on identical subjects at different times. Figure 9

illustrates these quantities. If the sensitivity is greater than one this indicates that test A is favored. If it is smaller than one, then test B is favored. Due to random scatter in the data, such decisions are made only when the difference from 1.0 is sizeable.

Table 7 presents results of the Mandel sensitivity ratio applied to four pairs of measurement methods. In the first case the spreading caliper (A) is compared to the metric gauge (B) for measurement of biprozygomatic diameter. The sensitivity of 0.77 indicates that the metric gauge is favored. In the second case the same two tests are compared relative to measurement of bizygomatic diameter. In this case the sensitivity is near unity indicating equal utility of the tests. The third comparison is for sliding caliper (A) versus metric gauge (B) for measurement of menton sellion distance. The sensitivity of 1.09 indicated that sliding caliper may be the better method although the difference from 1.0 is probably not statistically significant. Finally the utility of a tape holder was evaluated for bitragion pogonian arc measurements in item four where test A corresponds to tape and test B corresponds to tape with a holder. The sensitivity ratio of 1.18 indicates that the tape holder degrades the quality of the measurements.

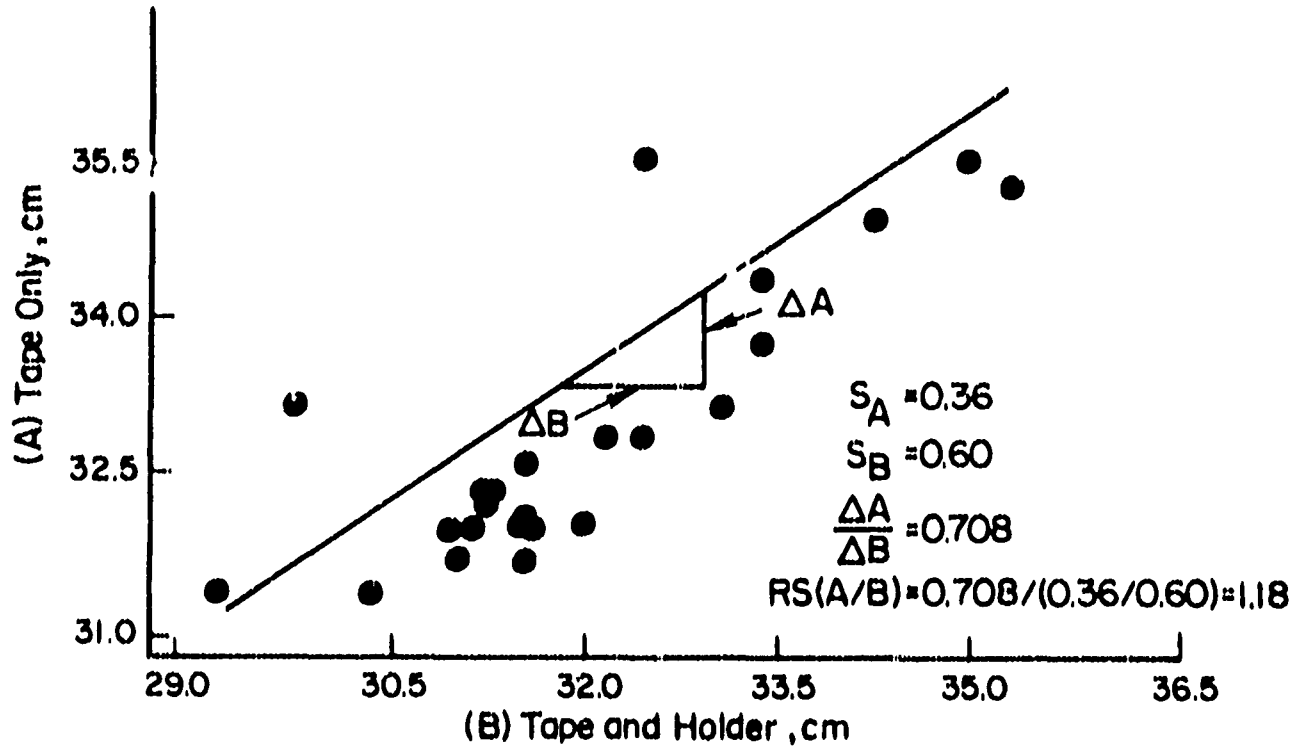


FIGURE 9. RELATIVE SENSITIVITY OF TWO MEASUREMENTS OF BITRAGION POGONIAN ARC

Table 7. Comparison of Measurement Techniques

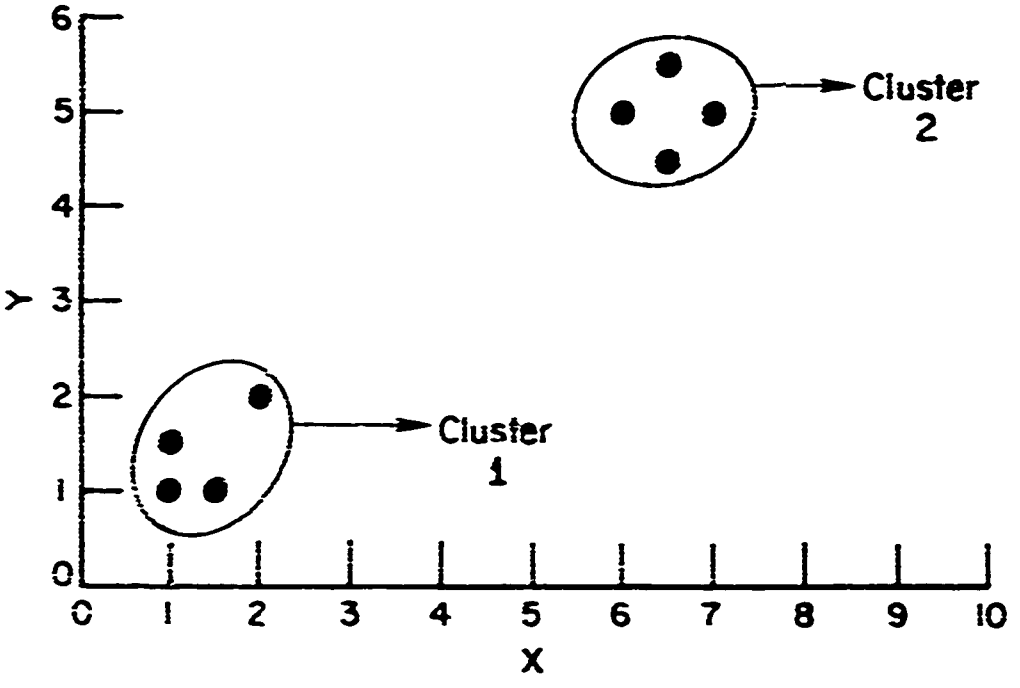
MEASUREMENT	TEST A	TEST B	RS(A/B)	FAVORED
Biprozygomatic Diameter	Spreading Caliper	Metric Gauge	0.77	B
Bizygomatic Diameter	Spreading Caliper	Metric Gauge	1.04	A or B
Menton Sellion	Sliding Caliper	Metric Gauge	1.09	A?
Bitragion Pogonian Arc	Tape	Tape and Holder	1.18	A

5.4.3 Cluster Analysis/Principle Component Analysis

In order to determine how well a given selection of anthropometric data can predict mask size, a cluster analysis and principle component analysis were conducted.

5.4.3.1 Cluster Analysis

Cluster analysis can be defined as the classification into groups of objects, characterized by their quantitative or qualitative properties. For example, consider the fictitious data plotted in Figure 10. Here synthetic data are plotted for variables "X" and "Y". It is clear that these "data" fall into two distinct groups or clusters. Identification of such clusters could conceivably be useful in assignment of mask sizes. For two variables as shown here the separation of the two clusters is clear just from plotting the data. When the number of variables increases, however, graphical methods are not efficient for cluster identification



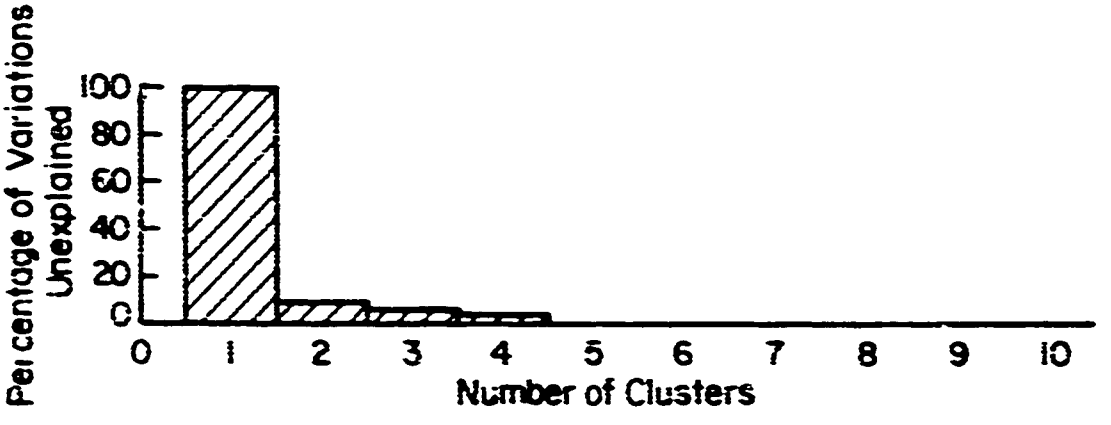


FIGURE 10. ILLUSTRATION OF CLUSTER ANALYSIS

and mathematical methods of cluster analysis must be used. The bottom figure in Figure 10 shows the percentage of remaining unexplained variation as a function of the number of clusters. Note that for one cluster, ie.. all of the data, all of the variation is unexplained by the cluster segments. For two clusters, however; only four percent of the data are unexplained. Little reduction is seen for three or four clusters illustrating that two clusters is "optimal" in an undefined sense. This description will be helpful in explaining the more complicated case to follow.

Cluster Analysis of Facial Measurement Data. The data for facial measurements of all subjects was subjected to cluster analysis and the results are presented in Figure 11. Here it can be seen that there does not appear to be a small subset of measurements which can be substituted for the large number of measured quantities. After subdivision into three clusters the unexplained variation is still nearly 50-percent. Addition of variables reduced this percentage only very slowly. These results tend to refute the hypothesis that there exists a small number of variables which describe facial characteristics.

5.4.3.2 Principle Component Analysis

In this study 14 measurements were made on the faces of the subjects. It would be quite unusual if all of these measu ents were uncorrelated. In fact it is to be expected that high levels of correlation would be the rule rather than the exception. With

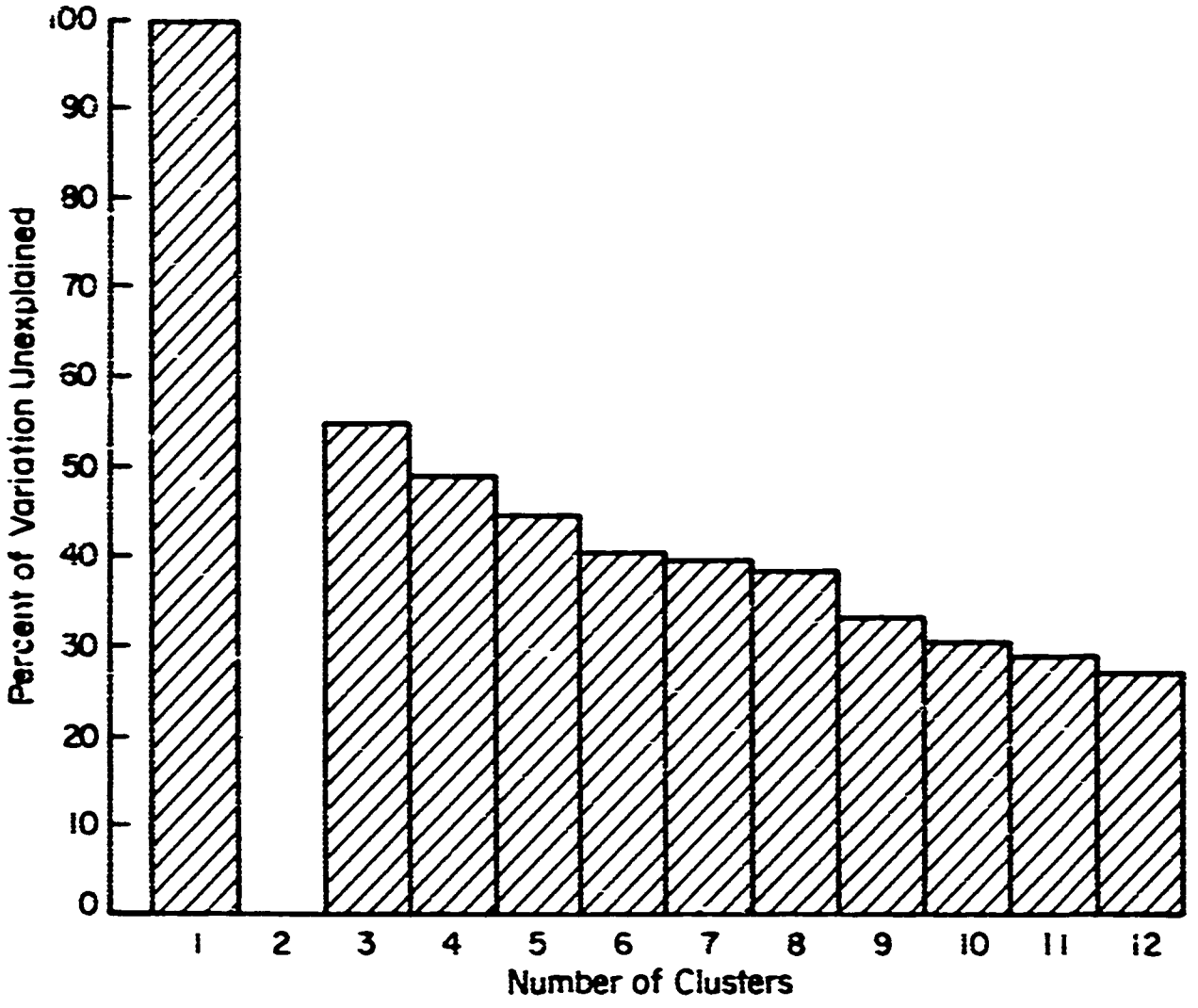


FIGURE 11. CLUSTER ANALYSIS RESULTS FOR FACE MEASUREMENTS AND OTHER SUBJECT DATA

such data it is frequently useful to attempt to find fewer uncorrelated composite "measures" with little loss of information content. If it were found that a few composite measures contained nearly as much information as the individual measurements, then the composite measures and the individual measurements which constitute them might be the basis for the design of a face mathematical/ statistical tool which searches for such uncorrelated composite measures.

Without going into detail of how principal components works, the form of the output will be described. The output consists of a list of principal components along with the percentage of the variance which the corresponding component explains. In addition the composition of each principal component is presented as a column vector which corresponds to an eigenvector of the correlation matrix of all measurements. This vector simply amounts to a weighted average of the individual measurements which corresponds to the principal component. For each subject then the weighted average of the measurements would correspond to a principal component score for that subject and that principal component. (For an example of a principle component analysis see Appendix C).

Principal components analysis was run for facial measurements. The variance contribution results are presented in Figure 12. Here the first component, which had all positive signs and therefore corresponded to a measure of size, explained 54.7

percent of the variability. The second which corresponded to a measure of shape explained an additional 15.9 percent. None of the others accounted more than 10 percent. These results are predictably similar to those for cluster analysis and they suggest the absence of a few key measurements which can be used to size masks.

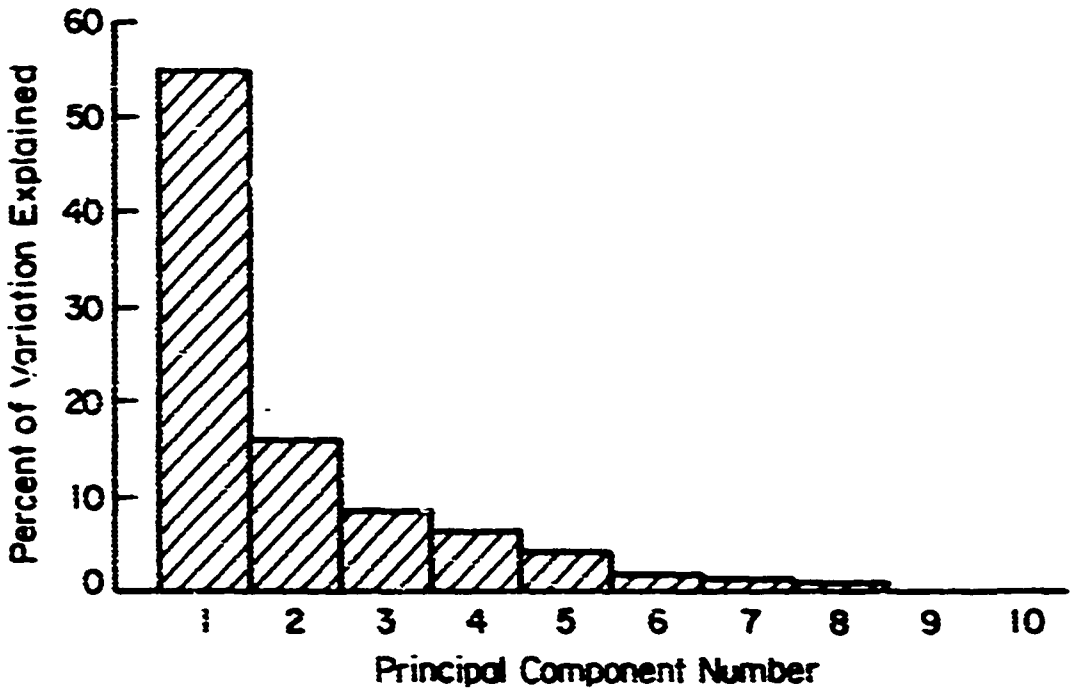


FIGURE 12. PRINCIPAL COMPONENT VERSUS EXPLAINED VARIANCE

5.4.4 Discriminant Analysis

In statistical terminology, multiple discriminant analysis is appropriate when the dependent variable is categorical and the independent variables are metric. In the context of this program, the dependent variable is "true mask size" which is small, medium or large; and the independent variables are the various facial measurements along with weight. The purpose is to assign the "correct" mask size given a set of facial measurements along with the weight of the subject. Discriminant analysis was originally proposed as a possible solution to the mask sizing problem cited in CRDEC-TR-87045. Based on a series of facial measurements, "correct" mask size was predicted. In these trials discriminant analysis resulted in correct classifications as high as 85-percent. The "correct" mask size for each subject was the result of an expert assessment. Theoretically, if a limited number of facial measurements could be used to predict mask size, then it might be possible to design a simple tool which would take these key measurements into account with one measurement operation.

Discriminant analysis was run on the available data after 48 subjects had been tested. The resulting percents of correct classification were 67, 58 and 71 percent for Scott, ILC and Avon masks respectively (some testing reported in CRDC-TR-85) utilized the Avon US10 mask). For statistical reasons it is unlikely that the results would be better for a large sample size. This is one reason that discriminant analysis of the data were not run after

all of the data were collected. A more fundamental reason, however, is that discriminant analysis is not completely appropriate for the task.

Discriminant analysis assumes that each subject fits one and only one mask size. This is clearly an incorrect assumption for the mask sizing situation since in some cases subjects can wear two different sizes with equal protection. In fact it is not unusual for some subjects to successfully fit into all three sizes.

Even with this problem it would be possible to force fit the discriminant analysis. This could be done by considering the following set of possibilities: S, M, L, S-M, S-L, M-L, S-M-L, where S stands for small, M for medium and L for large. In this case each set of sizes constitutes a category. However, this is inappropriate because for each subject only two of the three mask sizes were evaluated in the trials conducted in this program.

Another problem with discriminant analysis in the context of mask sizing is the absence of judgement as to possible ratios of facial measurements. It is not unreasonable to assume that selected ratios of facial measurements may be more predictive of mask size than computer-selected linear combinations of these measurements. It was therefore decided to abandon discriminant analysis and evaluate other methods which could more

easily incorporate assessments of appropriate measurement ratios by the anthropometry expert on the project.

5.4.5 Boxplot Analysis for Size Determination

Boxplots alternatively called box and whisker diagrams were developed by Tukey to enable concise visual comparisons of different data sets. They were used extensively in this study to condense large amounts of data and also, by Dr. A.T. Steegmann Jr., to assign "cutting points" for deciding between two continuous mask sizes.

5.4.5.1 Boxplot Description

Figure 13 illustrates three ways to represent a batch (to use Tukey's terminology) of data, a histogram, a dot plot and a boxplot. The data used for the example is for face size in cm. The first representation is a histogram which shows the number of measurements falling into various size categories. For example, four measurements fell into the interval centered at 120 cm., 13 fell into the interval centered at 130 cm. etc. Since these center points are 10 cm apart, the interval widths are 10 cm. Therefore the smallest four measurements centered at 120 cm fell in the interval between 115 and 125 cm. The 13 measurements centered at 130 cm actually fell between 125 and 135 cm etc. Histograms such as this show the nature of the distribution of measurements.

The second figure is a dotplot of the same data. A dotplot is

```
Histogram of FACESIZE   N = 113

Midpoint   Count
     120       4  ****
     130      13  *************
     140      28  ****************************
     150      25  *************************
     160      25  *************************
     170       9  *********
     180       5  *****
     190       0
     200       1  *
     210       3  ***
```

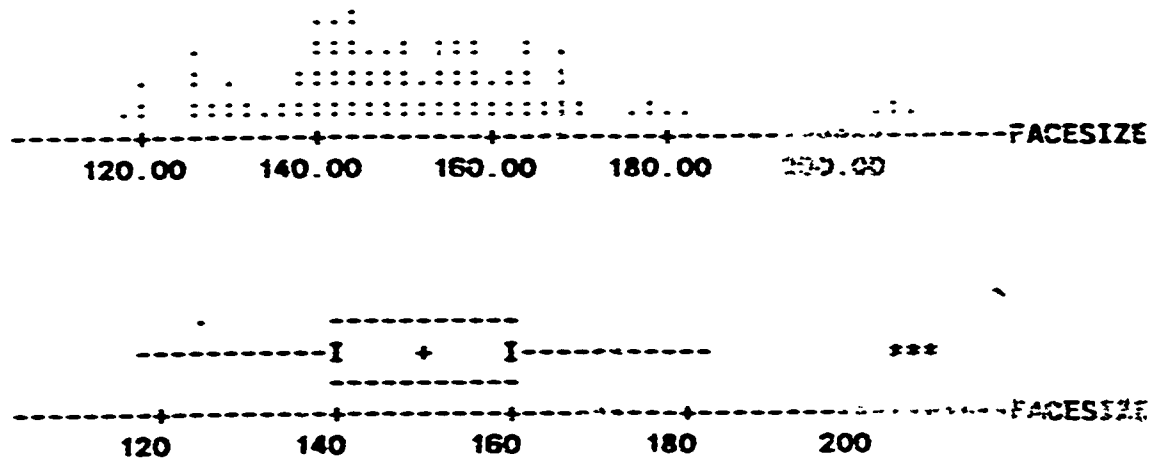


FIGURE 13. HISTOGRAM, DOTPLOT AND BOXPLOT FOR FACESIZE

similar to a histogram with the exception that the axis is divided more finely. This enables a better depiction of the distribution.

Each single dot represents a single datum. A colon, : , is used in a printing position to represent two data points.

Finally the third figure is a boxplot of the same data. The boxplot consists of three features, a box, two whiskers and outlying values. These are labeled in the figure. The box has a + sign within its boundaries. This represents the median of the batch of data and in this example falls at approximately 150 cm. In most textbooks the median is illustrated by a vertical line running from one side of the box to the other. The median is the value which dichotomizes the data such that half of the observations lie above the median and half lie below. The two boundaries of the box are called the lower and upper fourths. These are similar to the 25th and 75th percentiles of the data. Approximately one fourth of the data lie between the median and the lower or upper fourth. Therefore roughly 50 percent of the data fall within the limits demarcated by the box. The lower and upper whisker (i.e. straight lines emanating from each end of the box) each span an interval which includes again approximately one fourth of the data. Finally, the outliers, shown by *,s are data points which deserve special attention as they appear to exceptionally large or small. These may represent measurement or recording

errors or simply unsually small or large faces. By comparing the boxplot with the dotplot it can be seen that the boxplot preserves essential features of the empirical distribution of values in a very compact display. It is especially useful when several batches of data are to be compared side by side. For example, Figure 14 shows a boxplot for facesize for subjects which have been assessed by TM procedure to be "small", "medium", and "large" with respect to the most suitable mask.

5.4.5.2 Box Discriminators

Utilizing boxplots such as those shown in Figure 14, S/M and M/L dividing points were recommended by Dr. A.T. Steegmann. Basically if there is no overlap for a given measurement between the three sizes, prediction would be 100%, and if all three sizes showed the same measurement distribution, predictive power would be 0. Usually, the result was somewhere between. This allowed lines to be drawn directly on the diagrams at the points of best separation of the three sizes. Each line (i.e., S/M or M/L) consequently could be given a metric value. The best results came with variables constructed by adding two anthropometric dimensions utilizing the TM standard as the true size. The five recommended predictors are summarized in Table 8. Boxplots for these bivariate predictors are shown in Figures 15-19. As evidenced by these boxplots, even the "best" predictors have overlap indicating that some of the population will be incorrectly sized.

Recommendations for S/M and M/L dividing points utilizing each of the TM, PF, and BF standards for each of the masks (ILC, and Scott XM40, and Avon Mask) is detailed in Appendix H and summarized in Table 9.

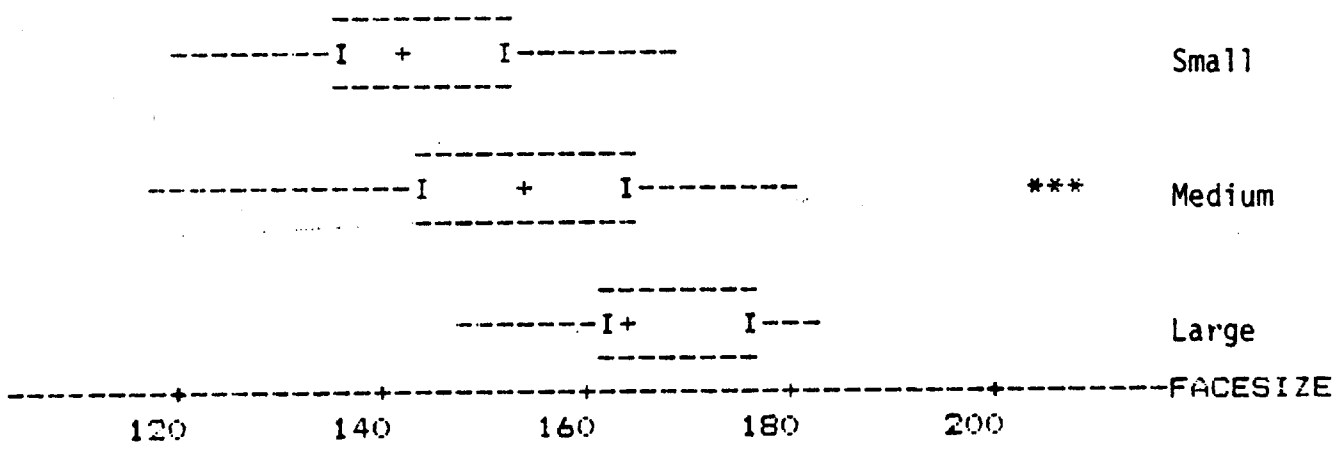


FIGURE 14. BOXPLOTS FOR TM FITS OF SMALL, MEDIUM AND LARGE MASKS (ILC DOVER MASKS)

TABLE 8

RECOMMENDATIONS FOR BIVARIATE PREDICTORS

Rank	Measurement #	Description	S/M dividing point	M/L Dividing Point
1	11 and 13 (calipers)	(Face Width + Face Height). This is the single best set, and separates all 3 companies' masks (Scott, better than Avon, better than ILC).	Clearly at 26.2 cm	Less well at 27.0 cm
2	5 and 6 (tape)	(Temple-Forehead Arc + Cheek-bone-chin Arc). Separates all 3 companies' mask, but Scott > Avon > ILC.	Very well at 44.3cm, ILC, 44.8).	Very well at 46.1 cm, ILC less clearly at that value
3	14 and 16 (gauge)	(Face Width + Face Height) separates all 3 companies masks, but Scott > Avon > ILC.	Very well at 26.7 cm, ILC 26.9 cm	Less well at 27.7 cm
4	12+1/2 (6)	(Cheekbone width + 1/2 Cheek-bone chin Arc), separates all 3 companies' mask, but Scott > Avon > ILC.	ILC very well at 26.0 cm, others less well at 25.8 cm	Less well at 26.8 cm, ILC badly
5	9 and 10 (holder)	(Ear-Forehead Arc + Ear-chin arc) separates all 3 companies' masks equivalently, but not strongly.	ILC at 63.0 cm, others at 62.7	Scott at 64.4 cm, Others at 65.2 cm

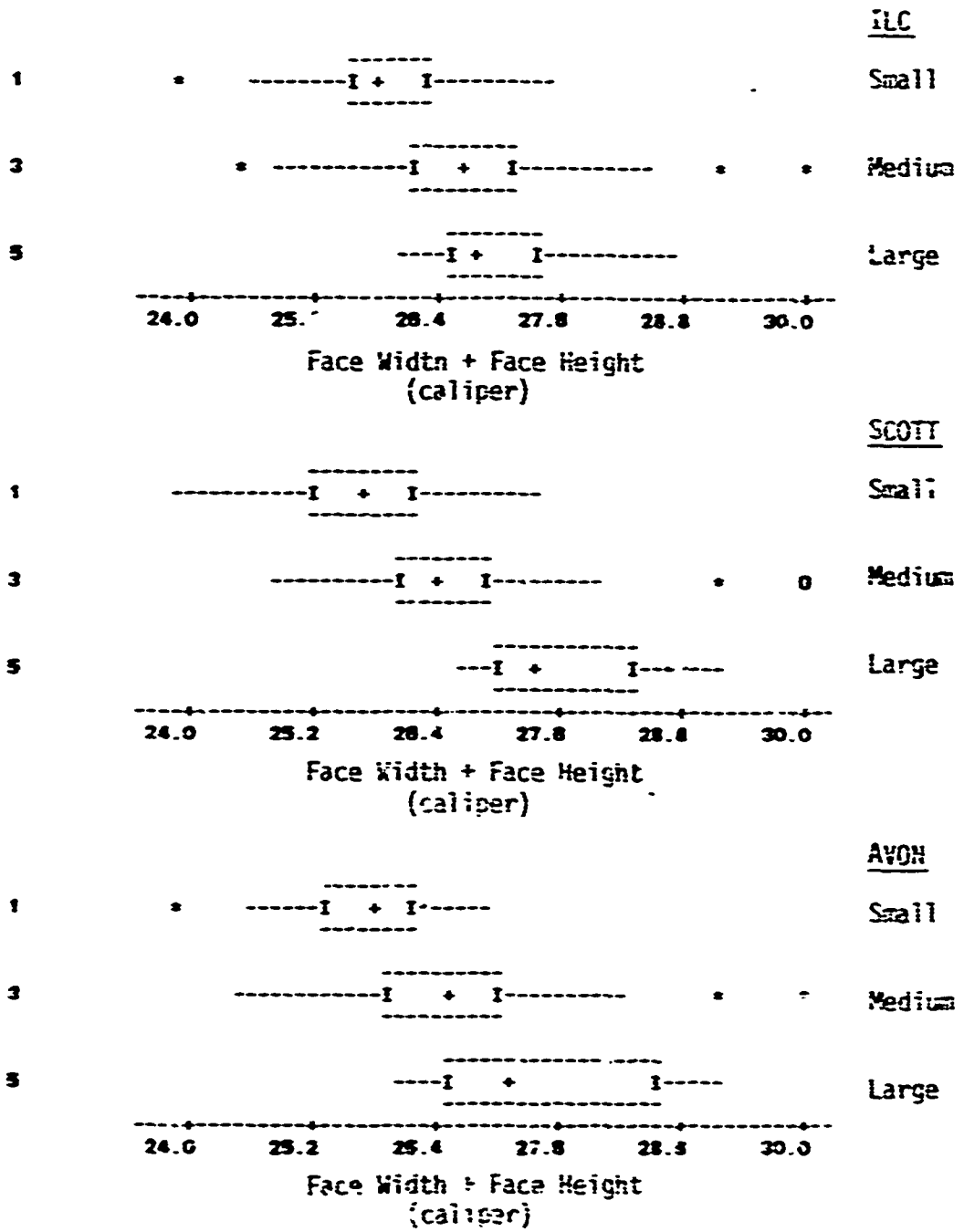


FIGURE 15. BOXPLOTS FOR FACE WIDTH AND FACE HEIGHT FOR THREE MASK MANUFACTURERS

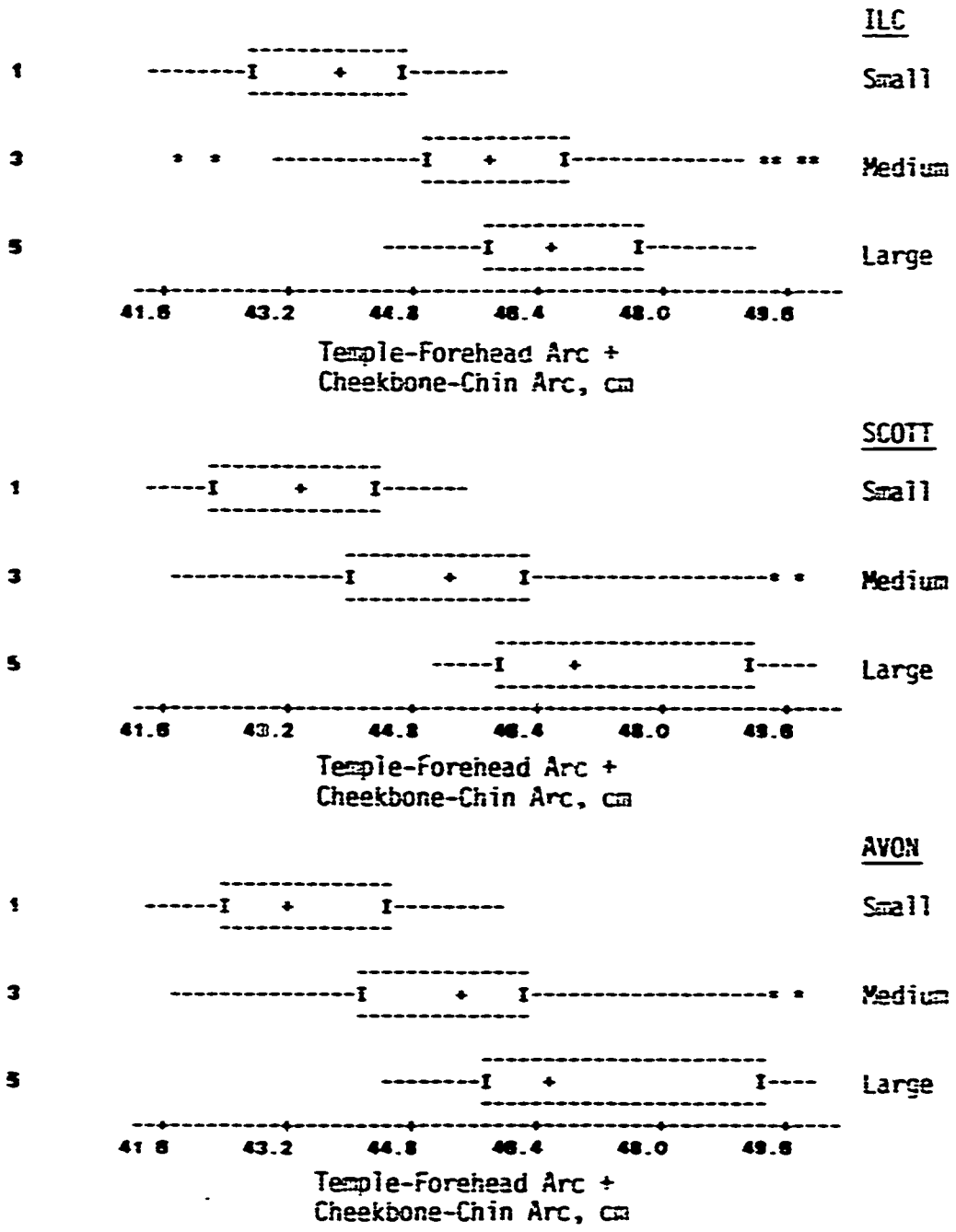


FIGURE 16. BOXPLOTS FOR TEMPLE-FOREHEAD ARC AND CHEEKBONE-CHIN ARC FOR THREE MASK MANUFACTURERS (TAPE AND MARKER TOOL)

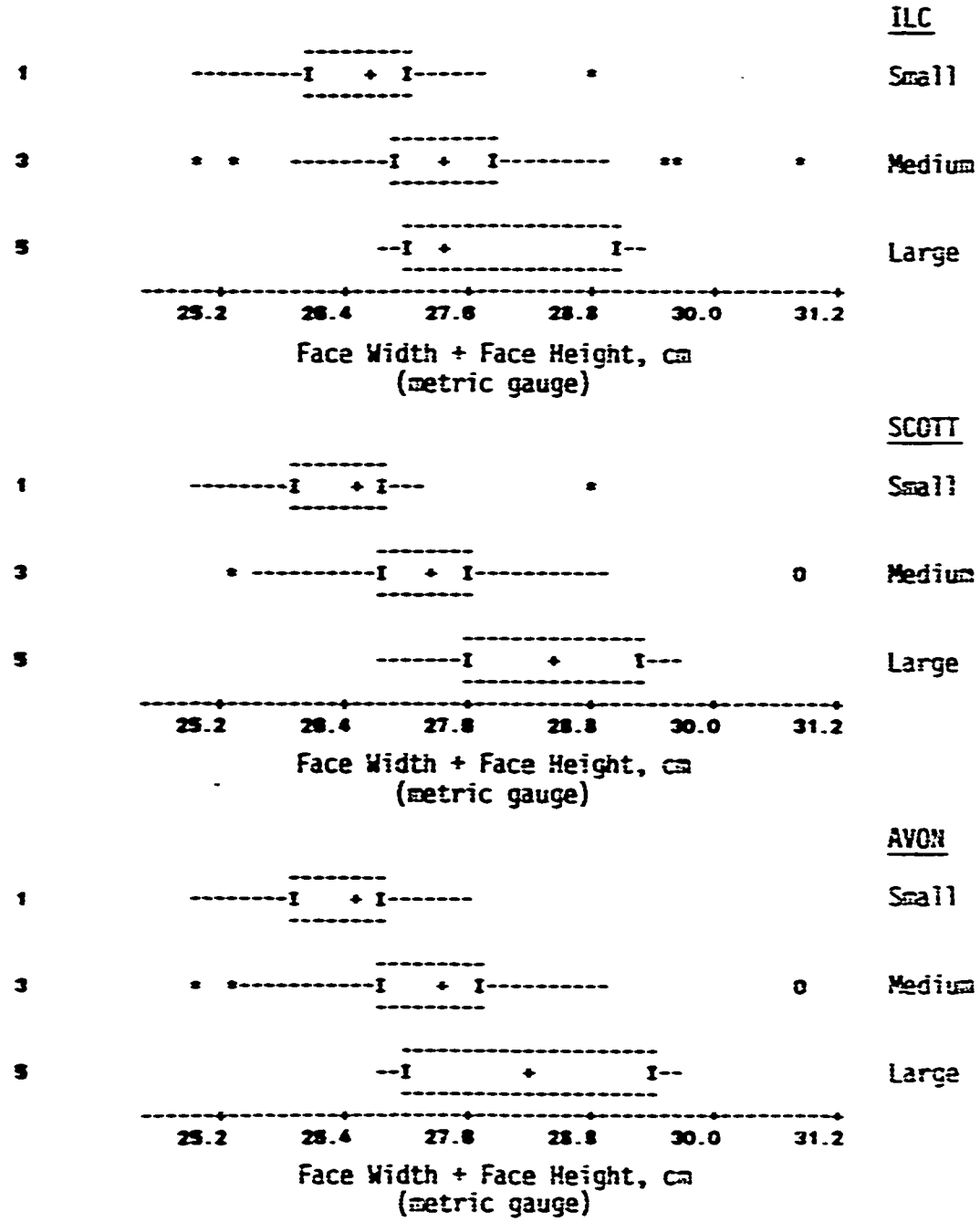


FIGURE 17. BOXPLOTS FOR FACE WIDTH AND FACE HEIGHT FOR THREE MASK MANUFACTURERS

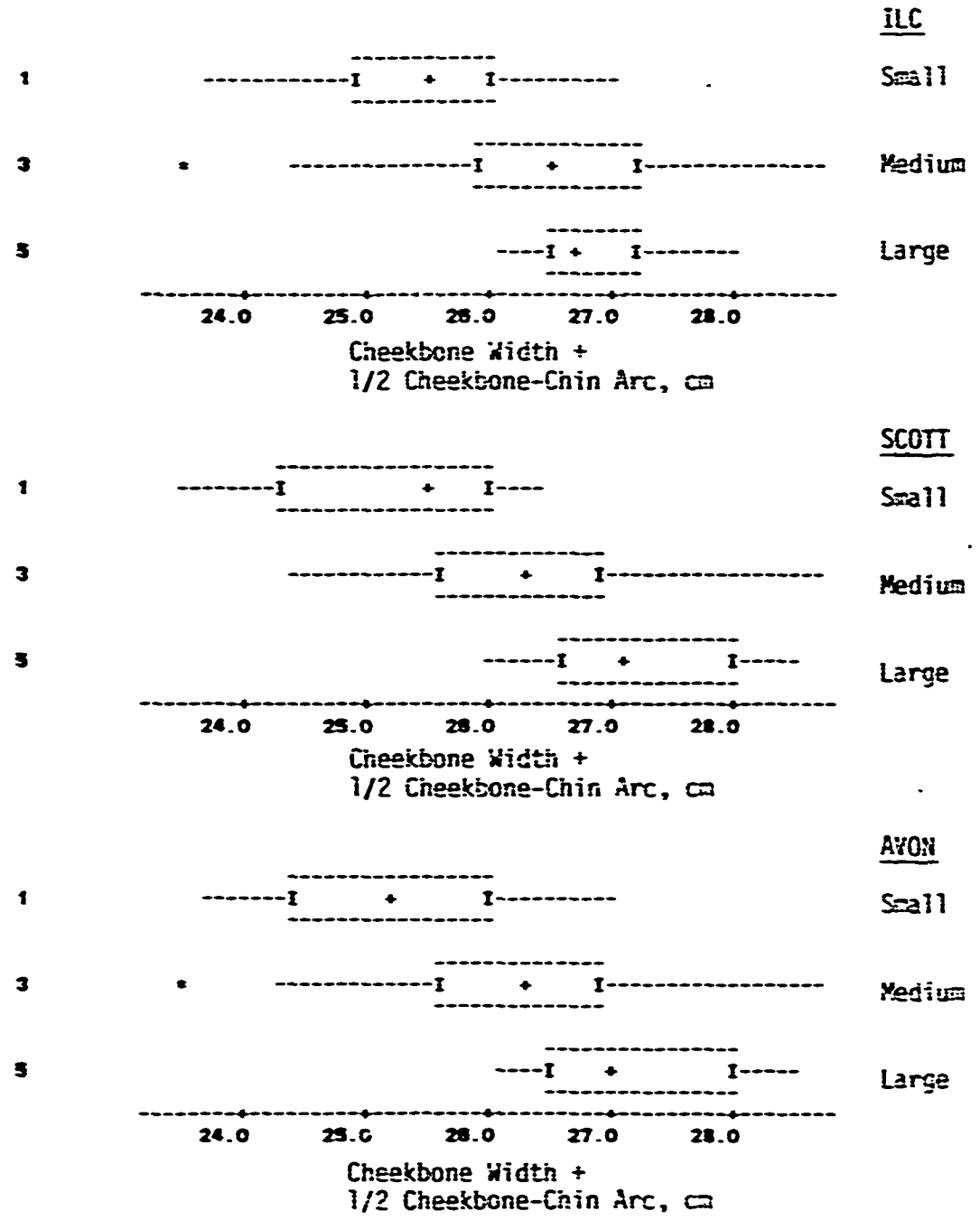


FIGURE 18. BOXPLOTS FOR CHEEKBONE WIDTH AND 1/2 CHEEKBONE-CHIN ARC FOR THREE MASK MANUFACTURERS

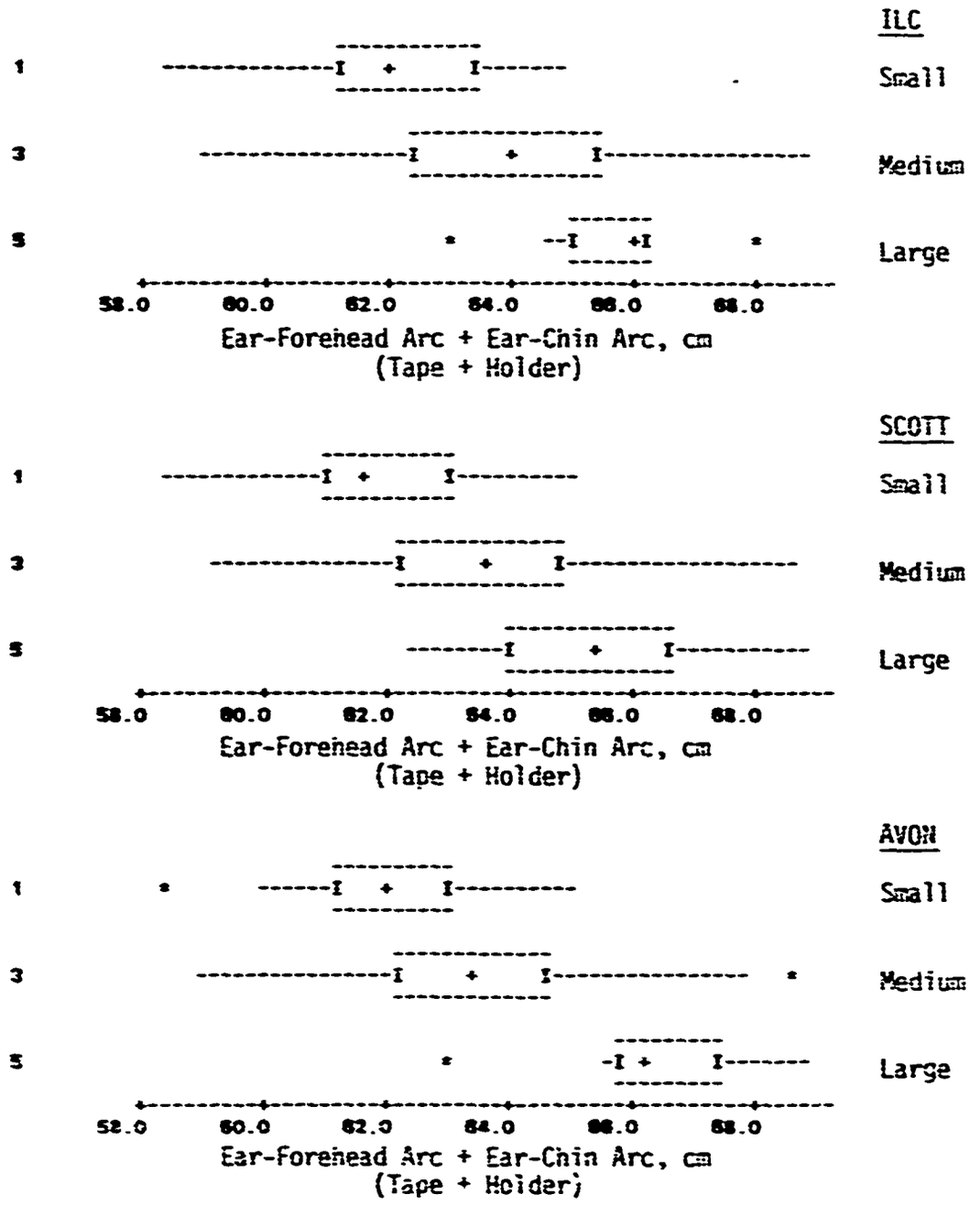


FIGURE 19. BOXPLOTS FOR EAR-FOREHEAD ARC + EAR-CHIN ARC FOR THREE MASK MANUFACTURERS

TABLE 9 DISTRIBUTION OF PREDICTORS

ANTHROPOMETRIC VARIABLES	TM Fit			Best Fit			PF Performance		
	ILC	SCOTT	AVON	ILC	SCOTT	AVON	ILC	SCOTT	AVON
1. Height		M/L							
2. Weight	M/L			S/M* M/L				S/M	
3. Adj. Template	M/L	S/M M/L	M/L		S/M	S/M			S/M M/L
4. Submand. Skinfold									
5. Temple-Forehead Arc		M/L		M/L			M/L	M/L	
6. Cheekbone-Chin Arc	S/M	S/M M/L	S/M	M/L	S/M		M/L	S/M	S/M
7. Ear-Frontal Arc (H)			M/L		M/L		S/M*M/L		S/M
8. Ear-Chin Arc	M/L		M/L			S/M			S/M
9. Ear-Frontal Arc (H)	M/L								
10. Ear-Chin Arc (H)	S/M		M/L						
11. Face Width									
12. Cheekbone									
13. Face Height		S/M M/L			S/M	S/M			
14. Face Width (C)		M/L							
15. Cheekbone Width (C)									
16. Face Height (C)									
5. + 6. Temp FH-Ck-Chin Arc	S/M M/L	S/M M/L	S/M M/L	M/L			S/M*M/L	S/M	
7. + 8. Er.FH + Er-Chin Arc	S/M M/L		M/L	S/M M/L*		S/M		S/M	S/M
9. + 10. Er.FH + Er-Chin (H)	S/M M/L		S/M M/L						S/M
11. + 13. Face Wd + Face Ht.	S/M M/L	S/M M/L	S/M M/L			S/M	S/M		
14. + 16. " " " " (C)	S/M M/L	S/M M/L	S/M M/L			S/M	M/L		
12. + ½ 6. Ck Wd + ½ Ck-Chin Arc	S/M M/L	S/M M/L	S/M M/L					S/M*	S/M

* Poor discriminator

NOTE: S/M and M/L indicate that a minimally acceptable cutting point between the specified masks was found in this cell.

These boxplots indicated that the best size predictor, from the perspective of the TM/BF/PF comparison is the TM approach. That is, anthropometrics were more predictive of TM fit than of other methods. BF and PF were about equal (see Table 9). Within the TM series, no single anthropometric variable approached reasonable levels of prediction for all three masks, though #3 (the adjustable template) gave cut-off points for medium/large in all masks, and #6 (cheekbone chin arc) likewise separated small/mediums across the board. Consequently, a single variable approach is not recommended.

Within the TM series, combining pairs of anthropometric variables into single values proved to be the best approach for finding good discriminator points. The anthropcmetric pairs which are particularly recommended because the measurements themselves are simple, and with training, fairly accurate are #11 + #13, #5 + #6, and the forehead chin arc using the stethescop. These measurements are outlined below.

i) #11 and #13 (Face Width [Bizygomatic] ÷ Face Height [Menton-Sellion] used as a single variable does the best job overall of S/M and M/L separation. It separates sizes best for Scott, next for Avon, and least well for ILC with S/M better than M/L.

ii) #5 and #6 (Temple-Forehead Arc [Bitemporal Fossa-Minimum frontal Arc] + Cheekbone-Chin Arc [Biprozygomatic-Menton Arc]) is also a fairly good predictor. It works for three masks, but better in all three for S/M than M/L. However, these measurements do require the use of Temporal Fossa/Prozygion and Menton Finding Tools.

iii) Forehead and Chin Arcs using the stethoscope - like tape holder [#9 and #10] shows less precision than the preceding two sets of combined variables. However, it is considerably faster, more foolproof, and easier than they are. In fact, with minor modifications, this tool could be improved for very easy use

and would not require landmarks at all.

In conclusion it was determined that several single and combined anthropometrics predict correct sizing fairly well, regardless of whether "correct" is defined by TM, BF, or PF criteria. However, even the best of them seem to reach correct assignment levels of only about 75 to 80%. This is below the 90% value which was the goal and which can reportedly be attained by trained technicians using the TM method. The reason for this prediction level probably relates to the fact that a mask fits well or poorly due to several variables, some of which are subjective. That is, the judgement of a fitter will include factors such as periphery/hair line relationships where anthropometrics alone will not.

5.4.6 Size Line Analysis

A size line analysis was also conducted on the data in which the dividing points for S/M and M/L for a given measurement or combination of measurements is set. Mask assignments were made and the percents of the population which would have a P.F. of 6667+ and 1667+ were determined. The dividing points were then moved to maximize these percentages. In addition, percentages which would be obtained if the TM method were used to size the subjects and if all the subjects were sized as medium were determined.

The mask assignments determined from the size line dividing points were then compared to the mask assignment which was made on the basis of the TM method. Assuming that the TM method

"correctly" sizes a mask, the number of subjects which were sized incorrectly was determined (by size).

Results for each mask, (Scott XM40, ILC XM40, and Avon US-10), are listed in Tables 10 - 12. Pie charts which depict the percentage mis-sized for each sizing method for each mask type may be found in Appendix J.

Basically all the measurements provide about the same PF percentages. Also, there is no significant difference in percentages between one measurement and a combination of measurements.

TABLE 10

Scott XM40 Size Line Analysis

Method	1667	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
TM	90	76	---	---	20	54	9	--
3	88	75	141	179	23	54	4	2
		* Number Resized -			12	15	2	
5	89	78	184	204	22	50	9	2
		* Number Resized -			12	14	7	
6	89	80	254	281	24	51	4	3
		* Number Resized -			13	12	1	
7	90	78	291	312	18	59	6	0
		* Number Resized -			10	20	4	
8	86	75	309	347	19	57	5	2
		* Number Resized -			11	18	3	
9	89	78	316	339	9	70	4	0
		* Number Resized -			4	22	2	
10	88	77	303	338	17	61	4	1
		* Number Resized -			8	18	2	
11	89	75	134	148	9	70	2	2
		* Number Resized -			7	24	0	
12	89	78	127	139	16	58	6	3
		* Number Resized -			12	21	4	
13	88	77	120	134	16	58	7	2
		* Number Resized -			9	16	3	
14	90	78	140	157	14	65	3	1
		* Number Resized -			7	20	1	
15	89	78	131	146	17	60	4	2
		* Number Resized -			11	22	4	
16	89	78	120	136	11	65	4	3
		* Number Resized -			7	21	3	
5+6	90	79	433	475	15	58	9	1
		* Number Resized -			9	20	6	
9+10	90	80	614	659	13	59	9	2
		* Number Resized -			6	19	7	
11+13	92	91	256	275	13	60	10	0
		* Number Resized -			6	18	5	

TABLE 10 (CONT)

Scott XM40 Size Line Analysis (Continued)

Method	1667	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
12+1/2(6)	8°	78	251	279	13	63	5	2
		* Number Resized -			8	20	2	
14+16	89	78	261	281	12	59	11	1
		* Number Resized -			5	15	4	
All Med	88	75	---	---	0	83	0	0
		* Number Resized -			0	29	0	

* Note: The Number Resized is the number of subjects in each of the sizes that were assigned a different mask size using the TM Sizing Method.

TABLE 11

ILC XM40 Size Line Analysis

Method	1667	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
TM	74	61	-	-	34	51	6	-
		* Number Resized			--	--	--	
3	78	66	147	182	36	48	3	4
		* Number Resized		-	16	18	2	
5	77	62	183	208	19	70	2	0
		* Number Resized		-	6	28	1	
6	80	66	255	280	33	50	6	2
		* Number Resized		-	11	16	4	
7	78	61	293	321	22	63	3	3
		* Number Resized		-	10	25	2	
8	81	61	312	351	26	62	2	1
		* Number Resized		-	13	28	2	
9	78	61	314	341	20	66	3	2
		* Number Resized		-	7	26	2	
10	77	61	304	338	18	69	4	1
		* Number Resized		-	8	31	4	
11	78	58	135	148	14	72	2	3
		* Number Resized		-	9	30	0	
12	75	59	128	140	19	63	5	4
		* Number Resized		-	9	27	4	
13	78	66	123	137	38	46		3
		* Number Resized		-	18	17	3	
14	77	58	141	157	18	69	3	1
		* Number Resized		-	7	28	2	
15	77	62	134	146	27	57	3	5
		* Number Resized		-	11	22	4	
16	72	59	124	137	29	55	3	5
		* Number Resized		-	16	24	3	
5+6	79	63	443	485	30	54	6	1
		* Number Resized		-	10	19	4	
9+10	77	61	618	673	19	66	5	1
		* Number Resized		-	5	26	4	
11+13	80	62	257	281	17	69	4	1
		* Number Resized		-	6	29	3	

TABLE 11 (CONT)

ILC XM40 Size Line Analysis (continued)

Method	1567	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
12+1/2(6)	76	66	257	278	29	54	6	2
		* Number Resized -			10	19	5	
14+16	76	60	268	289	28	55	5	3
		* Number Resized			11	19	2	
All Med	71	57	---	---	0	91	0	-
		* Number Resized -			0	40	0	

* Note: The Number Resized is the number of subjects in each of the sizes that were assigned a different mask size using the TM Sizing Method.

TABLE 12

US-10 Size Line Analysis

Method	1667	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
TM	90	82	---	---	19	58	6	--
3	90	89	141	179	21	60	3	0
		* Number Resized -			14	14	1	
5	87	82	183	207	15	65	2	2
		* Number Resized -			9	16	3	
6	87	85	251	279	18	60	5	1
		* Number Resized -			10	13	4	
7	85	81	288	315	11	64	5	4
		* Number Resized -			11	16	3	
8	88	85	310	338	22	54	8	0
		* Number Resized -			14	11	4	
9	86	83	306	334	9	67	4	4
		* Number Resized -			7	17	5	
10	90	85	302	333	16	59	7	2
		* Number Resized -			9	13	4	
11	85	81	132	148	4	78	2	0
		* Number Resized -			3	19	0	
12	86	83	128	140	18	58	4	4
		* Number Resized -			12	13	4	
13	85	82	120	134	14	61	7	2
		* Number Resized -			11	16	5	
14	86	81	139	153	12	66	3	3
		* Number Resized -			6	12	2	
15	85	83	131	146	15	61	4	4
		* Number Resized -			12	15	4	
16	86	81	122	137	16	64	3	0
		* Number Resized -			10	14	2	
5+6	90	86	443	486	22	54	5	3
		* Number Resized -			15	12	4	
9+10	88	83	620	663	19	58	6	1
		* Number Resized -			14	15	4	
11+13	89	88	261	279	25	52	4	3
		* Number Resized -			18	11	2	

TABLE 12 (CONT)

US-10 Size Line Analysis (Continued)

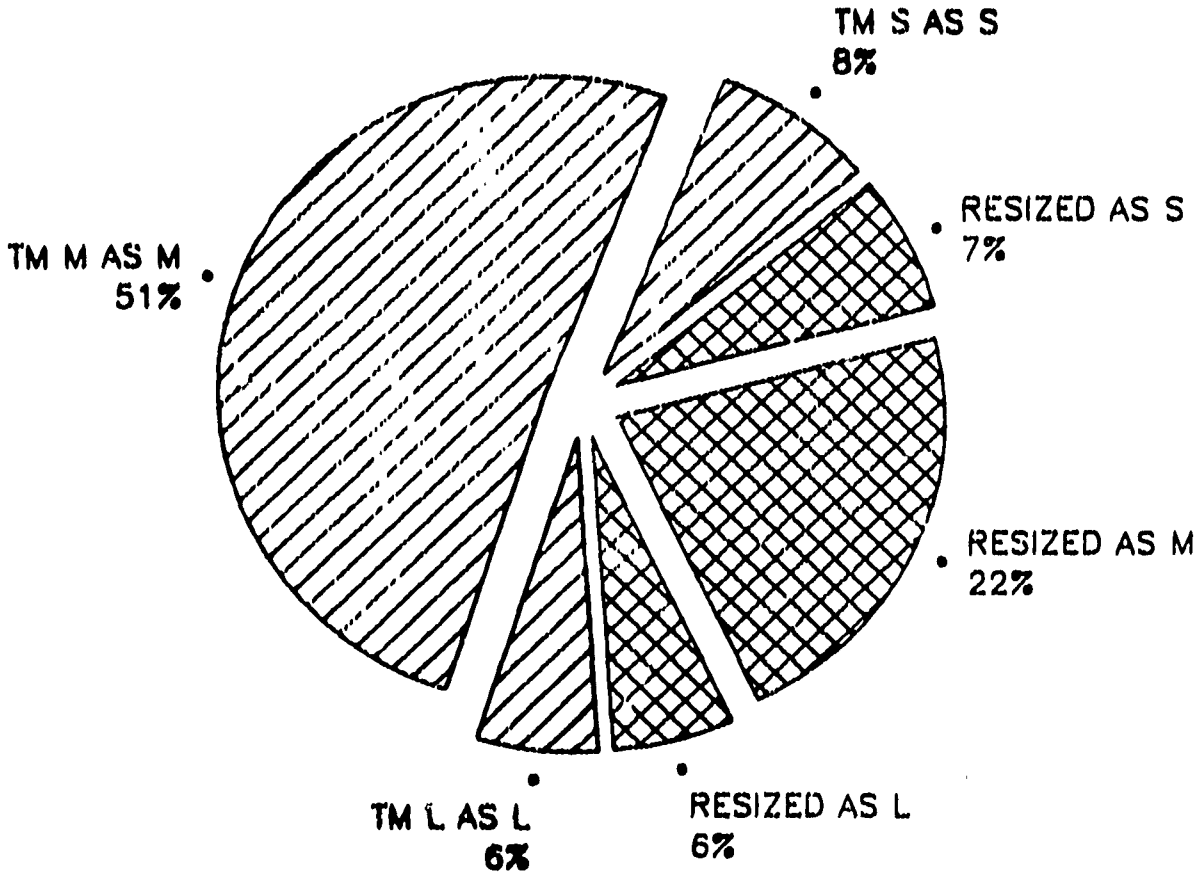
Method	1667	6667	Size Lines S-M	Size Lines M-L	Size Dist S	Size Dist M	Size Dist L	# not Tested
12+1/2(6)	90	88	257	278	24	51	5	4
		* Number Resized -			17	11	4	
14+16	87	84	264	288	15	62	5	1
		* Number Resized -			9	12	2	
All Med	83	80	---	---	0	84	0	0
		* number Resized -			0	25	0	

* Note: The Number Resized is the number of subjects in each of the sizes that were assigned a different mask size using the TM Sizing Method.

TM percentages were about the same as all the other methods and surprisingly if all the people are sized in mediums, the same PF percentages are also obtained.

Recognizing that there is no apparent improvement in protective factor, the percentage of the populations which could be incorrectly sized utilizing an anthropometric measurement method was examined. Pie charts for the combination of measurements 11 and 13 for each of the mask types are shown in Figures 20-22. This combination of measurements was the highest recommended by Dr. A. T. Steegmann from the results of the boxplot analysis. If these measurements are used, approximately 38 percent of the population would be sized incorrectly. On the average, regardless of the anthropometric method of sizing determination, 35-40 percent of the populations will be sized incorrectly, although the protective factor will be equivalent to the TM method and the actual size distribution will remain on the average undisturbed.

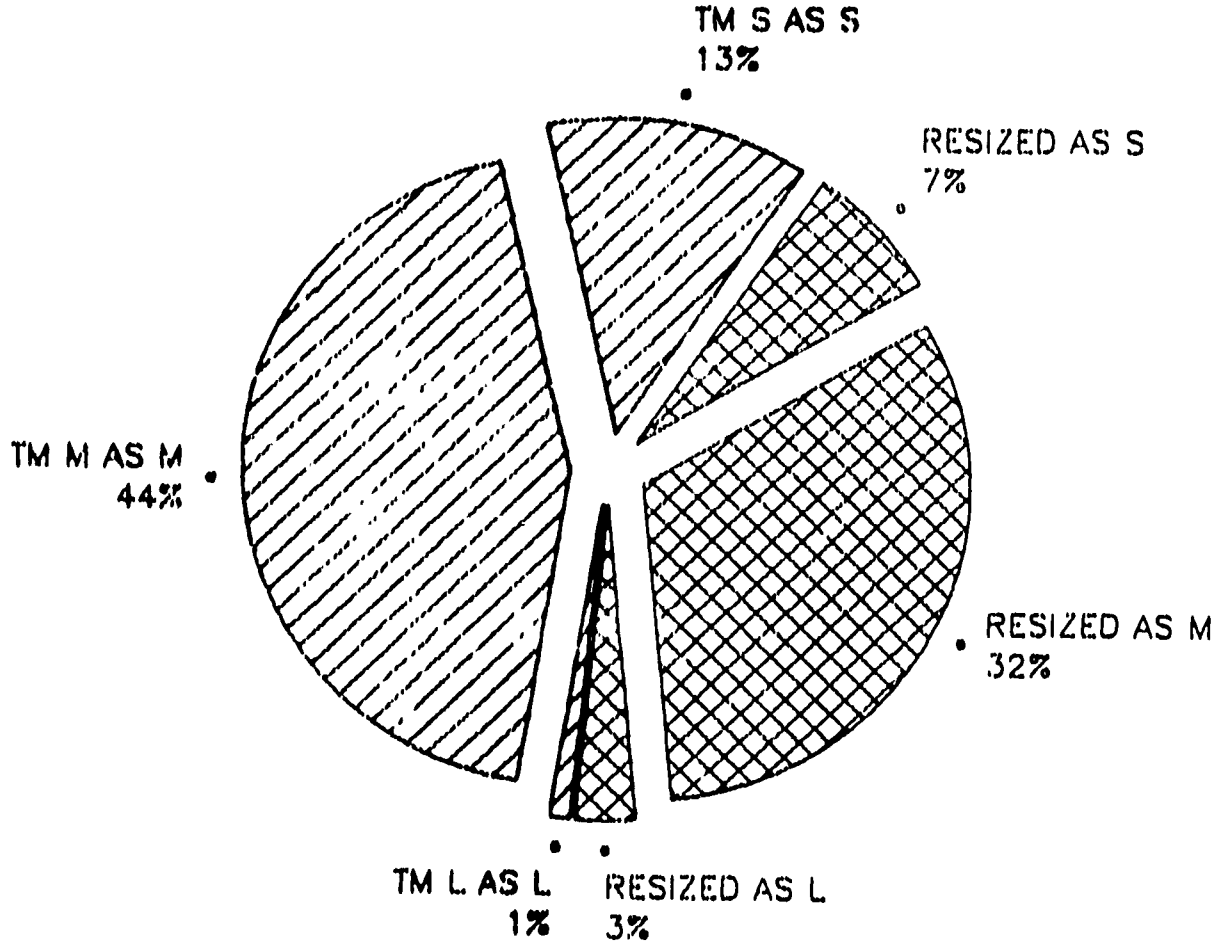
SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



METHOD 11+13

FIGURE 20

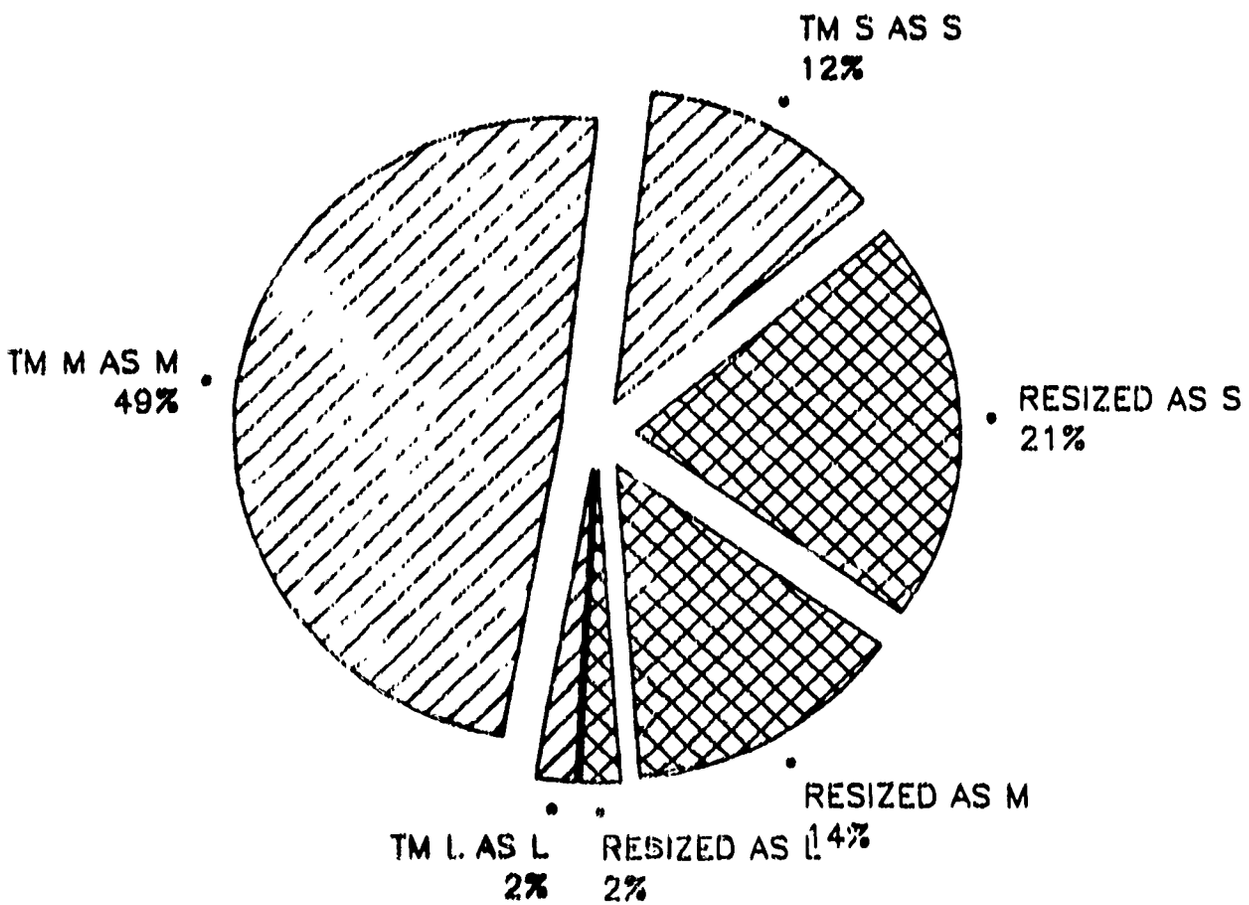
SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



METHOD 11+13

FIGURE 21

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



METHOD 11+13

FIGURE 22

6. CONCLUSION AND RECOMMENDATIONS

All of these analysis were consistent and indicated that mask sizing from analysis of facial measurements alone, or even combinations thereof is unlikely to provide a better fitting methodology than the presently used TM method. Regardless of the method of data analysis or sizing technique, results show that the size distribution (tariff) will remain essentially the same, the protective factor will be equivalent to the current TM method and that some portion of the population will be incorrectly sized. This is partially attributable to the difficulty and imprecision involved in obtaining facial measurements. The study performed at ILC Dover in which several measurers were evaluated for a number of subjects indicated that precision was poor (in comparison to measurements of firm physical objects) both within and between measurers and that it is virtually impossible to accurately measure facial characteristics. In addition, development of measurement aids did not result in significantly improved precision. Unfortunately the subtle differences in facial measurements required to differentiate mask sizes does not exceed the degree of human subjectivity.

The protective factor study performed at CRDEC indicated that the level of protection provided by the mask is essentially independent of the mask size. However, all results indicate that utilizing facial measurements to size the mask will actually degrade the overall operational capability provided by the mask.

The current technical manual method of sizing determination with training does provide the necessary level of differentiation, sizing 90% of the population correctly. The technical manual method combined with a field CNC fit checker (condensation nucleus counter) currently under development, would eventually provide the optimum method to sizing determination. The measurement of facial characteristics may be used in the future with the development of laser scanning devices to record and analyze these measurements, yielding overall an improved, "non-subjective" method of sizing determination.

7. REFERENCES

1. ILC Dover/ Scott Aviation XM40/42 Technical Manual- TM3-4240 300.

2. Not Used.

3. Mandel, J. The Statistical Analysis of Experimental Data. New York: Dover Publications Inc., 1964.

4. Not Used.

5. Tukey, J. W., Exploratory Data Analysis. New York: Addison and Wesely, 1973.

APPENDIX A

Modified M17 Sizing Calipers

(Drawings)

NOT SHOWN DUE TO LARGE SIZE

APPENDIX B

Landmark Sizing Device

(Drawing)

NOT SHOWN DUE TO LARGE SIZE

APPENDIX C

ILC In-House Test

Measurement Procedures

SIZING DETERMINATION

FREEHAND MEASUREMENT

ANTHROPOMETRY PROTOCOL: FREEHAND MEASUREMENTS

1. Face Height (Menton-Sellion Length)

   A) Seat subject, and tell them to close their jaws together.

   B) Using the sliding anthropometric calipers (blunt ends), center the fixed arm in the deepest point of the nasal saddle, and move the other arm down until it just slides under the center of the chin bone (mark both points before measuring). This works best when measurer's fingertips are at the ends of the caliper arms so she/he can feel for the proper landmarks. Use just enough pressure to firmly dimple the chin, but not so much as to be painful. See Figure 1.

   C) Read the caliper scale in millimeters. If the top of the moveabel caliper arm is three marks past the "11", record that as "113 mm". Where the measurement falls half-way between the millimeter marks, record the higher of the two.

2. Face Width (Probizygomatic Diameter)

   A) Subject remains seated, jaws together as before.

   B) You are to measure the width across the cheekbones at the approximate point where the edge of the protective mask seal ("the bubble") crosses the cheekbone from top to bottom (prozygion). The point is about 3/4" behind and 3/4" below the outer corner of the eye (ectocanthus). Make a mark here before measuring.

C) Hold the spreading caliper so that three fingertips on each hand surround the rounded measuring tips of the instrument. This allows you to feel for the proper location on the cheekbone, control the calipers, and avoid poking anyone in the eye.

D) Measure the distance across the cheekbones, applying moderate but not painful pressure. See Figure 2. Note that the dotted lines on the drawing show underlying bone (eye; cheekbone). Be sure that the caliper is centered on the face and is at the same vertical point on the cheekbone. Diagonal readings induce error. Again, record in millimeters.

3. Posterior Jaw Circumference (Bitragion-Submandibular)

A) Subject is seated, jaws closed. This measurement takes the circumference of the lower jaw, ear to ear, just in front of the "Adams Apple".

B) Refer to Figure 3. Immediately in front of the ear opening is a small triangular or half-round piece of cartilage. You can move it back and forth with your fingers. The point you are to measure from (tragion) is at the very top front of this structure, just in front of the ear canal. Make a mark here before measuring.

C) Use the millimeter tape. Put the "0" point of the tape at the right tragion, holding it firmly in place with your left hand. With your right hand, bring the tape under the lower jaw, just in front of the

jaw/neck junction, and up the other side of the jaw. Bring the tape up to left tragion and read the tape, again in millimeters. The tape should press the skin firmly, but should not be extremely tight.

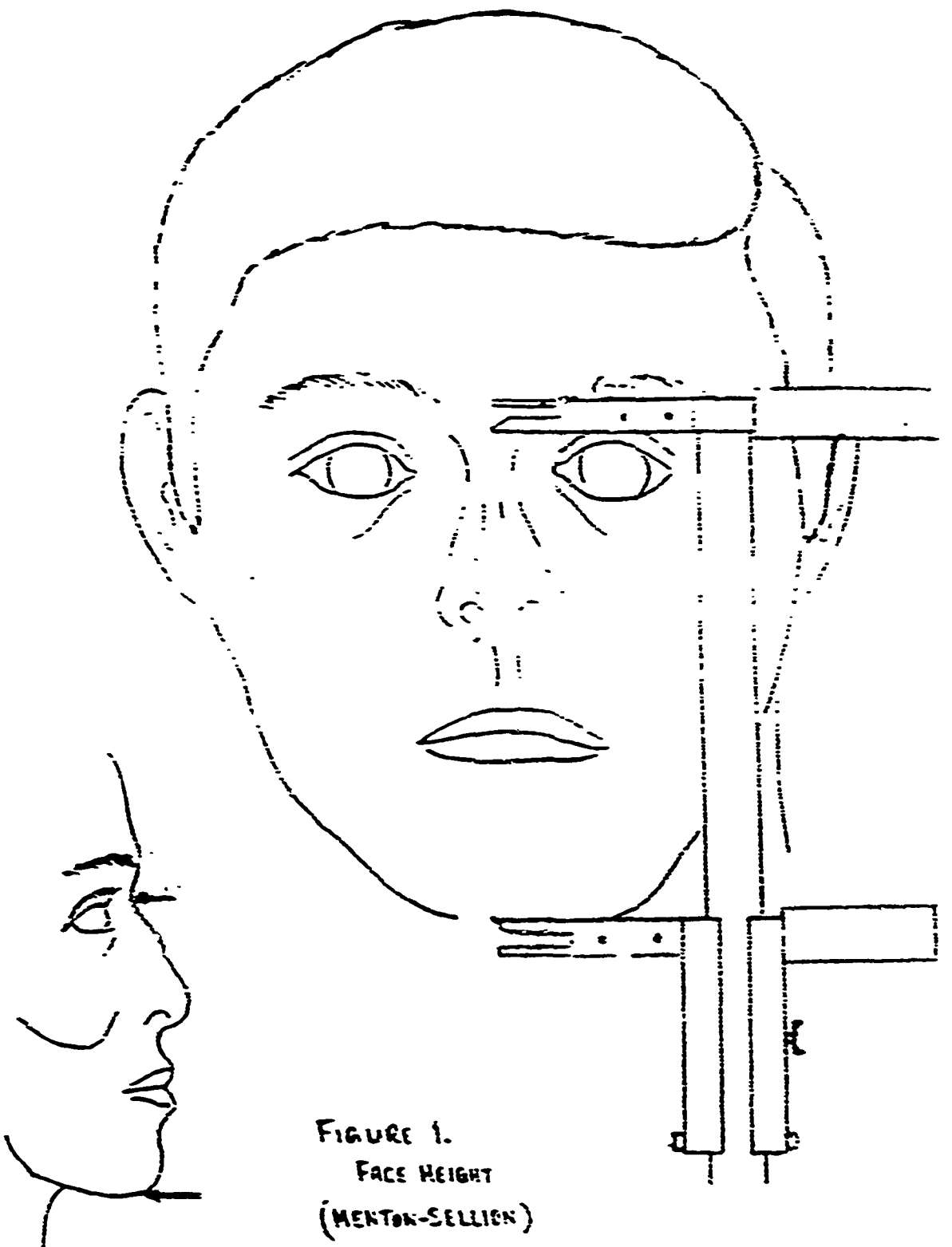


FIGURE 1.
FACE HEIGHT
(MENTON-SELLION)

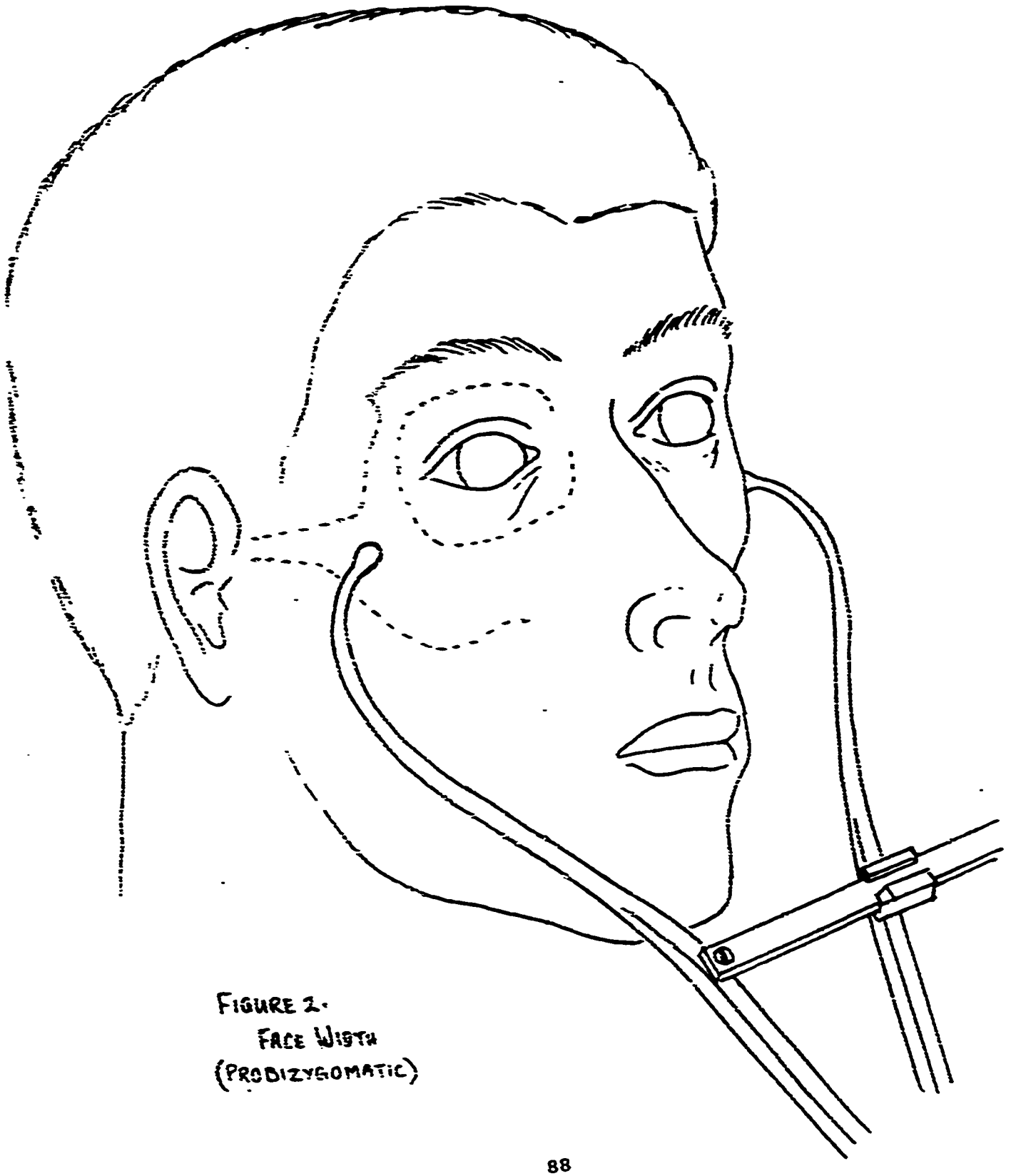


FIGURE 2.
FACE WIDTH
(PRODIZYGOMATIC)

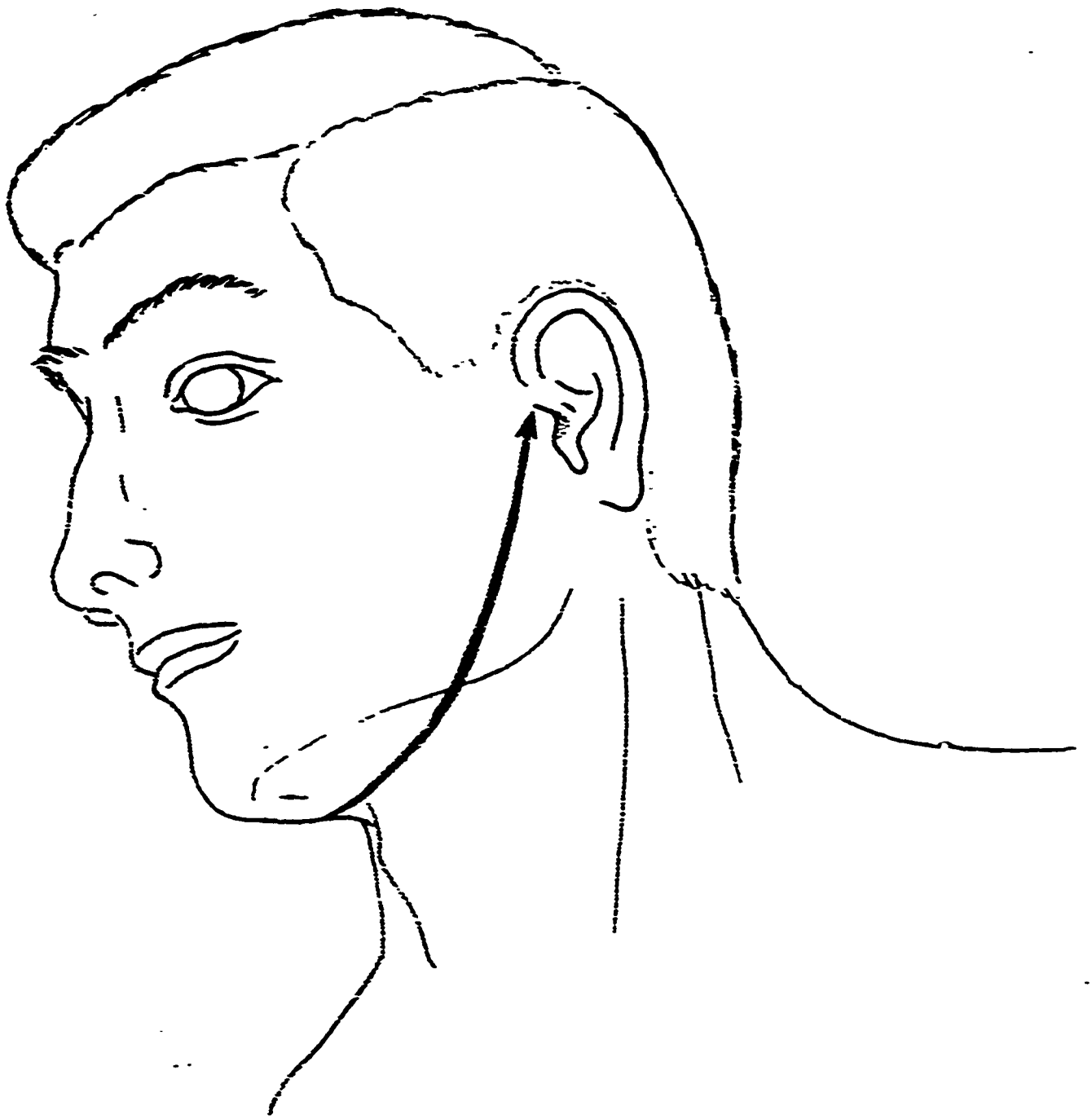


FIGURE 3.
POSTERIOR JAW CIRCUMFERENCE
(BITRAGION SUBMANDIBULAR)

SIZING DETERMINATION

LANDMARK ASSISTED MEASUREMENT

ANTHROPOMETRY PROTOCOL: LANDMARK INSTRUMENT MEASUREMENTS

Mark the following landmarks, in each case locating the point with the instrument specified, and making dots with a lipliner, or other hypoallergenic cosmetic. Pink or light red is the best color since it is clearly visible on any shade of skin. Caution: Subject closes eyes during actual measurement. Hold instrument in the hand opposite to the one you write with (for this and following steps).

A. Sellion: Slide the sellion-finder gently upward along the front of the nose until it comes to a stop at the nasal root (that is, butts up against the brow). Be sure the instrument is centered over the bridge of the nose, and work it gently up and down to be sure no skin is bunched up under it. The place a mark on the skin through the hole. See Figure 4.

B. Prozygion (right and left): Holding the prozygion finder vertically, very carefully bring the red arrow forward until it rests immediately against the outer corner of the eye fold (ectocanthus). Then make a dot on the skin of the cheekbone through the hole in the finder.

C. Menton: By visual estimate, locate the center line of the chin. With the subject's chin slightly raised (enough to tighten any sagging skin under the chin - an inch above horizontal), slide the menton finder onto the chin. Be sure the horizontal blade is flush with the skin beneath the chin and the chin is pushed all of the way into the finder. Pressure should be firm and steady enough to keep the chin seated. Mark the skin through the hole centered beneath the chin.

D. Tragion (right and left): See Figure 5. Immediately in front of the ear opening (external auditory canal) lies a triangular or rounded flap of cartilage called the tragus. It points outward and backward to protect and partly cover the ear opening. The landmark tragion lies just in front of the top of this flap. Mark it carefully, approaching with your marker from the direction of the face.

4. Face Height (Menton-Sellion)

A) Subject is seated, teeth together as before, and eyes closed.

B) Place the fixed top arm of the sliding calipers (blunt end) so that bottom plane of the arm tip centers on the dot between the eyes (sellion). Hold this carefully in place with the fingertips of one hand, and with the other move the moveable one down until it just fits under the middle of the chin. Bring it to rest in the center of the chin dot (Menton). Use just enough pressure to firmly dimple the chin, but not enough to cause pain, and be sure your caliper is still on Sellion correctly.

5. Face Width (Pro-Bizygomatic Breadth)

A) Again, instruct the subject to close his/her eyes.

B) Hold the spreading calipers by the measuring tips using three fingers of each hand. Bring the top of one arm fimly into contact with the Prozygion mark on one side of the face. Hold it there with your fingertips.

C) Then bring the other measing tip into contact with the other prozygion point on the other side of the face. Apply firm but not painful pressure to the measuring tips and read to the nearest millimeter as before.

6. Posterior Jaw Circumference (Bitragion Submandibular)

A) Subject is seated as before, teeth together and eyes closed. Chin should be slightly raised.

B) With fingers of one hand hold the metric tape so that "0" falls at the tragion point at the right ear.

C) With the other hand bring the tape downward and forward so that it crosses the center of the lower jaw at a point just in front of the jaw/neck junction, and bring it up the other side of the trgion.

D) Apply moderate pressure to the tape so that it compresses the skin somewhat, but not as hard that it is hard to hold in place. Then read the value to the nearest millimeter where the tape crosses the center of the left tragion dot.

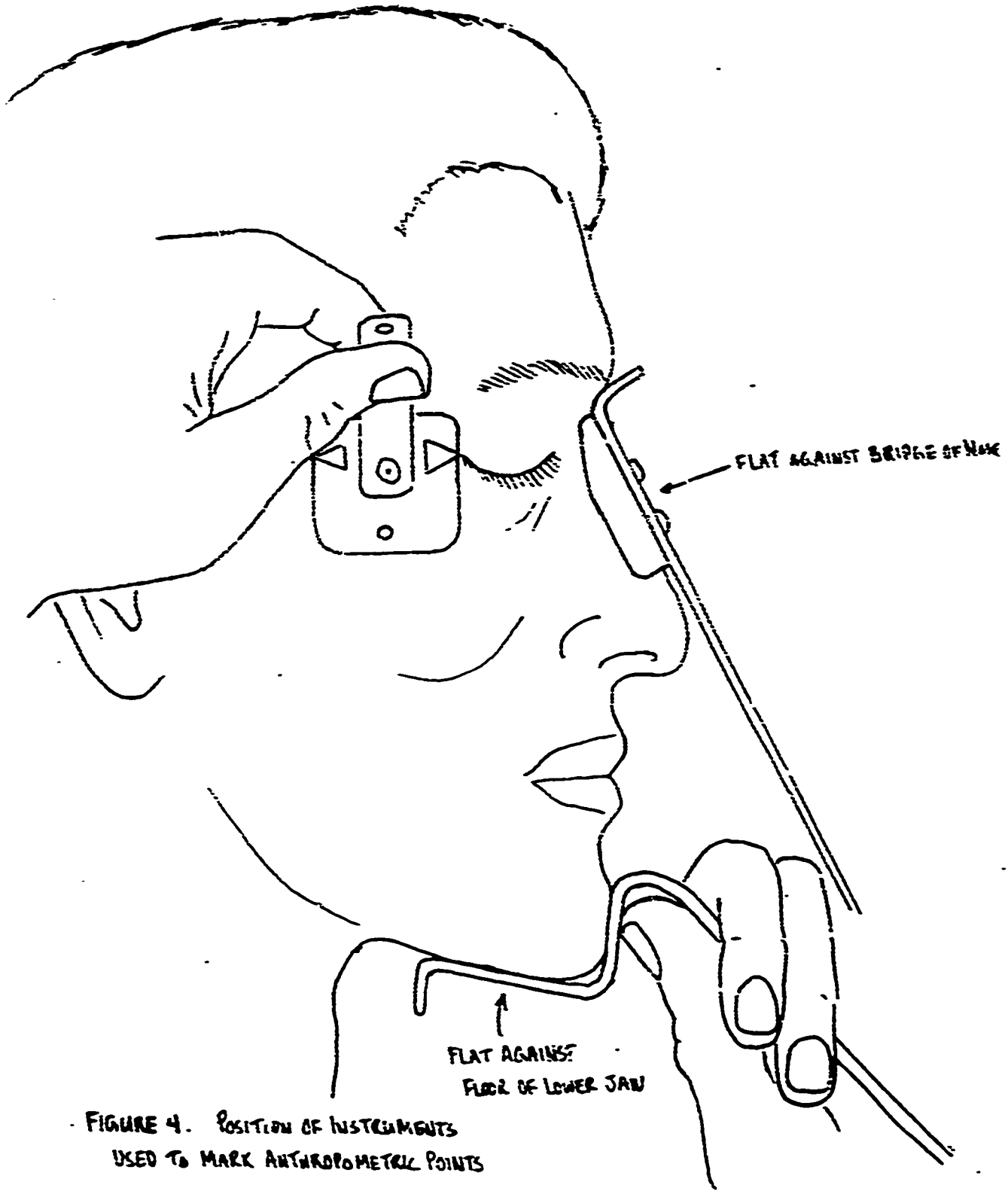


FIGURE 4. POSITION OF INSTRUMENTS USED TO MARK ANTHROPOMETRIC POINTS

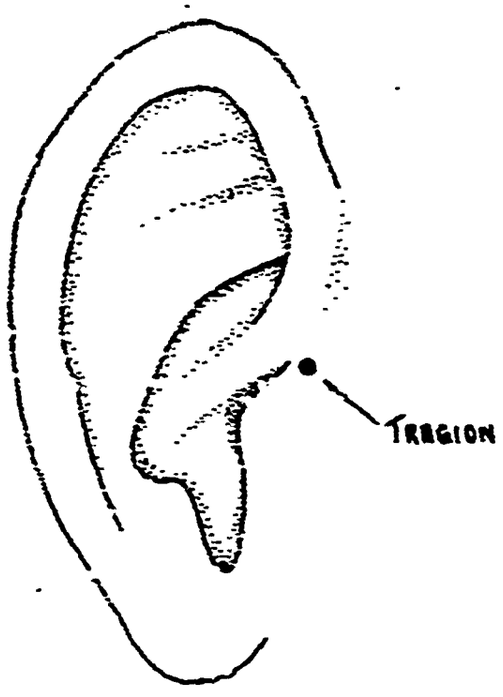


FIGURE 5.
RIGHT EAR SHOWING POSITION OF THE
ANTHROPOMETRIC LANDMARK "TRAGION"

APPENDIX D

ILC In-House Test

Raw Data

TABLE E1

Measurer # 1 FACE HEIGHT - Menton Sellion

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	131	131	127	4	129.67	3.56	1.89
2	123	122	121	2	122.00	0.67	0.82
3	116	115	113	3	114.67	1.56	1.25
4	112	115	111	4	112.67	2.89	1.70
5	111	109	108	6	110.33	6.89	2.62
6	136	127	132	9	131.67	13.56	3.68
7	130	129	125	5	128.00	4.67	2.16
8	121	120	116	5	119.00	4.67	2.16
9	114	116	108	8	112.67	11.56	3.40
10	127	130	124	6	127.00	6.00	2.45
11	119	115	116	4	117.33	2.89	1.70
12	143	137	135	8	138.33	11.56	3.40
13	148	148	139	9	145.00	18.00	4.24
14	129	123	129	6	127.00	8.00	2.83
15	126	129	125	4	126.67	2.89	1.70
16	118	120	118	2	118.67	0.89	0.94
17	138	137	133	5	136.00	4.67	2.16
18	139	135	133	6	135.67	6.22	2.49
19	133	128	126	7	129.00	8.67	2.94
20	122	120	120	2	120.67	0.89	0.94
21	131	128	122	9	127.00	14.00	3.74
22	125	126	119	7	123.33	9.56	3.09
23	125	126	117	9	122.67	16.22	4.03
	134	131	126	8	130.33	10.89	3.30
25	112	111	109	3	110.67	1.56	1.25
26	128	130	124	6	127.33	6.22	2.49
27	135	132	129	6	132.00	6.00	2.45
28	127	121	118	9	122.00	14.00	3.74
29	116	122	115	7	117.67	9.56	3.09
30	123	122	124	2	123.00	0.67	0.82
							2.45

TABLE E2

Measurer # 2 FACE HEIGHT - Menton Sellion

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	135	134	130	5	133.00	6.67	2.15
2	117	121	120	4	119.33	2.89	1.70
3	114	110	104	10	109.33	16.89	4.11
4	110	113	120	14	115.67	36.22	6.02
5	111	108	114	6	111.00	6.00	2.45
6	129	131	129	2	129.67	0.89	0.94
7	131	123	126	8	126.67	10.89	3.30
8	121	125	121	4	122.33	3.56	1.89
9	112	114	111	3	112.33	1.56	1.25
10	125	121	131	10	125.67	16.67	4.11
11	116	115	114	2	115.00	0.67	0.82
12	136	133	135	3	134.67	1.56	1.25
13	136	141	143	7	140.00	8.67	2.94
14	126	125	129	4	126.67	2.89	1.70
15	129	127	121	8	125.67	11.56	3.40
16	113	118	111	7	114.00	8.67	2.94
17	134	115	134	19	127.67	90.22	9.96
18	131	129	138	9	132.67	14.89	3.86
19	130	132	125	7	129.00	8.67	2.94
20		117	121	NA	119	4.00	2.00
21	127	124	127	3	126.00	2.00	1.41
22	122	126	121	5	123.00	4.67	2.16
	126	121	124	5	123.67	4.22	2.05
24	123	130	128	7	127.00	8.67	2.94
25	108	112	112	4	110.67	2.56	1.60
26	126	127	125	2	126.00	0.67	0.82
27	132	132	131	1	131.67	0.22	0.47
28	121	126	119	7	122.00	8.67	2.94
29	120	118	117	3	118.33	1.56	1.25
30	121	124	124	3	123.00	2.00	1.41
							2.54

TABLE E3

Measurer # 3 FACE HEIG . - Menton Sellion

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	129	124	126	5	126.33	4.22	2.05
2	117	115	113	4	115.00	2.67	1.63
3	107	104	107	3	106.00	2.00	1.41
4	112	104	106	8	107.33	11.56	3.40
5	100	101	100	1	100.33	0.22	0.47
6	129	127	128	4	128.33	2.89	1.70
7	122	120	123	3	121.67	1.56	1.25
8	113	109	115	6	112.33	6.22	2.47
9	108	107	104	4	106.33	2.89	1.70
10	120	124	117	5	121.00	4.67	2.16
11	104	106	113	9	107.67	14.89	3.86
12	123	130	132	9	128.33	14.89	3.86
13	139	135	137	4	137.00	2.67	1.63
14	118	114	117	4	116.33	2.89	1.70
15	119	117	119	2	118.33	0.89	0.94
16	108	113	114	6	111.67	6.89	2.62
17	124	121	129	8	124.67	10.89	3.30
18	126	127	127	1	126.67	0.22	0.47
19	122	131	126	9	126.33	13.56	3.68
20		114	115	NA	NA	0.25	0.50
21	122	120	121	2	121.00	0.67	0.82
22	119	113	119	6	117.00	8.00	2.83
	114	116	116	2	115.33	0.89	0.94
24	123	127	123	4	124.33	3.56	1.89
25	100	100	113	13	104.33	37.56	6.13
26	118	129	123	5	120.33	4.22	2.05
27	126	128	133	7	129.00	8.67	2.94
28	113	112	110	3	111.67	1.56	1.25
29	115	119	114	5	116.00	4.67	2.16
30	112	111	120	9	114.33	16.22	4.03
							2.29

TABLE E4

Measurer # 4 PACK HEIGHT - Menton Sellion

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	137	137	137	0	137.00	0.00	0.00
2	111	118	115	7	114.67	8.22	2.87
3	117	110	110	7	112.33	10.89	3.30
4	110	103	110	7	107.67	10.89	3.30
5	109	111	107	4	109.00	2.67	1.63
6	127	127	132	5	128.67	5.56	2.36
7	123	123	131	8	125.67	14.22	3.77
8	131	122	112	19	121.67	60.22	7.76
9	109	111	109	2	109.67	0.89	0.94
10	131	124	116	15	123.67	37.56	6.13
11	112	109	117	8	112.67	10.89	3.30
12	134	130	131	4	131.67	2.89	1.70
13	145	140	145	5	143.33	5.56	2.36
14	124	121	125	4	123.33	2.89	1.70
15	121	124	124	3	123.00	2.00	1.41
16	156	109	113	47	126.00	452.67	21.28
17	135	110	130	25	125.00	116.67	10.80
18	135	134	133	2	134.00	0.67	0.82
19	126	125	132	7	127.67	9.56	3.09
20	113	113	120	7	115.33	10.89	3.30
21	121	118	124	6	121.00	6.00	2.45
22	126	122	124	4	124.00	2.67	1.63
	123	114	124	10	120.33	20.22	4.50
	129	124	120	9	124.33	13.56	3.68
25	101	103	110	9	104.67	14.89	3.86
26	129	125	121	8	125.00	10.67	3.27
27	136	136	131	5	134.33	5.56	2.36
28	120	121	121	1	120.67	0.22	0.47
29	115	108	115	7	112.67	10.89	3.30
30	156	115	116	41	129.00	364.67	19.10
							4.21

TABLE E5

Measurer # 1 POSTERIOR JAW - Bitragion Submandibular Arc

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	326	326	352	26	334.67	150.22	12.26
2	278	280	287	9	281.67	14.89	3.86
3	290	288	297	9	291.67	14.89	3.86
4	274	260	306	46	280.00	370.67	19.25
5	271	262	284	22	272.33	81.56	9.03
6	300	303	302	3	301.67	1.56	1.25
7	325	320	331	11	325.33	20.22	4.50
8	280	284	282	4	282.00	2.67	1.63
9	259	260	254	6	257.67	6.89	2.62
10	308	314	322	14	314.67	32.89	5.73
11	265	270	261	9	265.33	13.56	3.68
12	313	325	335	22	324.33	80.89	8.99
13	300	294	305	11	299.67	20.22	4.50
14	272	262	262	10	265.33	22.22	4.71
15	325	317	334	17	325.33	48.22	6.94
16	294	330	295	36	306.33	280.22	16.74
17	322	315	332	17	323.00	48.67	6.98
18	318	313	323	10	318.00	16.67	4.08
19	297	292	311	19	300.00	64.67	8.04
20	295	295	305	12	297.67	27.56	5.25
21	306	294	321	27	307.00	122.00	11.05
22	276	298	310	34	294.67	198.22	14.08
	310	295	318	23	307.67	90.89	9.53
24	320	312	321	9	317.67	16.22	4.03
25	290	287	298	11	291.67	21.56	4.64
26	305	298	315	17	306.00	48.67	6.98
27	315	304	320	16	313.00	44.67	6.68
28	321	312	323	11	318.67	22.89	4.78
29	286	285	302	15	291.33	68.22	8.26
30	290	293	299	9	294.00	14.00	3.74
							6.92

TABLE E6

Measurer # 2 POSTERIOR JAW - Bitragion Submandibular Arc

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	335	332	334	3	333.67	1.56	1.25
2	281	285	290	9	285.33	13.56	3.68
3	288	330	305	42	307.67	297.56	17.25
4	270	281	308	38	286.33	254.89	15.97
5	263	295	278	32	278.67	170.89	13.07
6	282	305	302	23	296.33	104.22	10.21
7	315	320	339	24	324.67	106.89	10.34
8	258	286	308	50	284.00	418.67	20.46
9	232	272	268	40	257.33	323.56	17.99
10	298	328	330	32	318.67	214.22	14.64
11	265	262	270	8	265.67	10.89	3.30
12	316	315	334	19	321.67	76.22	8.73
13	280	308	302	28	296.67	144.89	12.04
14	260	284	298	38	280.67	246.22	15.69
15	310	329	330	20	323.00	84.67	9.20
16	280	295	300	20	291.67	72.22	8.50
17	305	339	321	34	321.67	192.89	13.89
18	290	331	316	41	312.33	286.89	16.94
19	280	306	304	26	296.67	139.56	11.81
20		318	290	NA	NA	196.00	14.00
21	298	315	323	25	312.00	108.67	10.42
22	278	303	291	25	290.67	104.22	10.21
-	284	310	311	27	301.67	156.22	12.50
24	293	320	315	22	311.00	88.67	9.42
25	288	290	305	17	294.33	57.56	7.59
26	300	317	320	20	312.33	77.56	8.81
27	294	321	328	34	314.33	314.89	14.66
28	320	340	334	20	331.33	70.22	8.38
29	292	272	310	38	291.33	240.89	15.52
30	293	304	290	14	295.67	36.22	6.02
							11.42

TABLE E7

Measurer # 3 POSTERIOR JAW - Bitragion Submandibular Arc

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	340	340	350	10	343.33	22.22	4.71
2	285	290	280	10	285.00	16.67	4.08
3	283	300	300	17	294.33	64.22	8.01
4	288	295	315	27	299.33	130.89	11.44
5	270	275	275	5	273.33	5.56	2.36
6	280	295	285	15	286.67	38.89	6.24
7	302	340	325	38	322.33	244.22	15.63
8	280	300	290	20	290.00	66.67	8.16
9	260	260	260	0	260.00	0.00	0.00
10	305	325	320	20	316.67	72.22	8.50
11	260	270	220	50	250.00	466.67	21.60
12	315	330	310	20	318.33	72.22	8.50
13	275	305	295	30	291.67	155.56	12.47
14	270	270	275	5	271.67	5.56	2.36
15	320	335	323	15	326.00	42.00	6.48
16	285	290	310	25	295.00	116.67	10.80
17	310	325	325	15	320.00	50.00	7.07
18	315	330	320	15	321.67	38.89	6.24
19	285	305	300	20	296.67	72.22	8.50
20		300	300	NA	NA	0.00	0.00
21	310	310	330	20	316.67	88.89	9.43
22	275	320	295	45	296.67	338.89	18.41
	307	320	330	23	319.00	88.67	9.42
	293	310	310	17	304.33	64.22	8.01
25	290	290	293	3	291.00	2.00	1.41
26	305	325	315	20	315.00	66.67	8.16
27	316	325	330	14	323.67	32.56	5.79
28	320	335	335	15	326.67	38.89	6.24
29	285	300	305	20	296.67	72.22	8.50
30	298	300	300	2	299.33	0.89	0.94
							7.65

TABLE E8

Measurer # 4 POSTERIOR JAW - Bitragion Submandibular Arc

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	330	330	320	10	326.67	22.22	4.71
2	265	280	280	15	275.00	50.00	7.07
3	280	310	285	30	291.67	172.22	13.12
4	260	310	310	50	293.33	555.56	23.57
5	260	290	265	30	271.67	172.22	13.12
6	260	300	290	40	283.33	288.89	17.00
7	290	330	315	40	311.67	272.22	16.50
8	265	280	275	15	273.33	38.89	6.24
9	230	265	290	60	261.67	605.56	24.61
10	310	320	305	15	311.67	38.89	6.24
11	240	260	260	20	253.33	88.89	9.43
12	130	310	295	180	245.00	6650.00	81.55
13	270	300	290	30	286.67	155.56	12.47
14	260	280	255	25	265.00	116.67	10.80
15	290	315	320	30	308.33	172.22	13 12
16	290	300	295	10	295.00	16.67	4.08
17	350	330	320	30	333.33	155.56	12.47
18	300	325	357	57	327.33	544.22	23.33
19	270	300	298	30	289.33	187.56	13.70
20	290	310	290	20	296.67	88.89	9.43
21	300	315	310	15	308.33	38.89	6.24
22	260	295	295	35	283.33	272.22	16.50
	300	310	315	15	308.33	38.89	6.24
	310	320	300	20	310.00	66.67	8.16
25	285	290	285	5	286.67	5.56	2.36
26	310	310	295	15	305.00	50.00	7.07
27	315	330	320	15	321.67	38.89	6.24
28	310	310	330	20	326.67	155.56	12.47
29	260	295	297	37	284.00	288.67	16.99
30	290	305	295	15	296.67	38.89	6.24
							13.70

TABLE E9

Measurer # 1 FACE WIDTH - Bizygomatic Diameter:

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	137	137	130	7	134.67	10.89	3.30
2	120	126	120	6	122.00	8.00	2.83
3	134	125	130	9	129.67	13.56	3.68
4	131	121	126	10	126.00	16.67	4.08
5	120	119	118	2	119.00	0.67	0.82
6	136	126	127	10	129.67	20.22	4.50
7	140	134	131	9	135.00	14.00	3.74
8	120	118	113	7	117.00	8.67	2.94
9	111	114	106	8	110.33	10.89	3.30
10	116	126	125	10	122.33	20.22	4.50
11	124	121	121	3	122.00	2.00	1.41
12	125	126	124	2	125.00	0.67	0.82
13	115	119	122	7	118.33	8.22	2.87
14	123	121	122	2	122.00	0.67	0.82
15	132	140	137	8	136.33	10.89	3.30
16	127	122	118	9	122.33	13.56	3.68
17	122	130	124	8	125.33	11.56	3.40
18	121	124	122	3	122.33	1.56	1.25
19	131	134	124	10	129.67	17.56	4.19
20	118	124	119	6	120.33	6.89	2.62
21	137	129	130	8	132.00	12.67	3.56
22	130	127	121	9	126.00	14.00	3.74
	135	133	128	7	132.00	8.67	2.94
24	131	123	125	8	126.33	11.56	3.40
25	125	120	124	5	123.00	4.67	2.16
26	122	127	123	5	124.00	4.67	2.16
27	121	128	122	7	123.67	9.56	3.09
28	141	129	131	12	133.67	27.56	5.25
29	121	125	127	6	124.33	6.22	2.49
30	125	120	121	5	122.00	4.67	2.16
							2.97

TABLE E10

Measurer # 2 FACE WIDTH - Bizygomatic Diameter)

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	134	137	134	3	135.00	2.00	1.41
2	119	129	121	10	123.00	18.67	4.32
3	132	133	112	21	125.67	93.56	9.67
4	130	129	119	11	126.00	24.67	4.97
5	121	126	119	7	122.00	8.67	2.94
6	134	132	128	6	131.33	6.22	2.49
7	145	138	132	13	138.33	28.22	5.31
8	126	134	122	12	127.33	24.89	4.99
9	122	130	109	21	120.33	74.89	8.65
10	136	138	126	12	133.33	27.56	5.25
11	123	124	122	2	123.00	0.67	0.82
12	143	140	125	18	136.00	62.00	7.87
13	125	141	122	19	129.33	69.56	8.34
14	134	131	123	11	129.33	21.56	4.64
15	142	138	126	16	135.33	46.22	6.80
16	124	129	125	5	126.00	4.67	2.16
17	136	139	127	12	134.00	26.00	5.10
18	126	132	122	10	126.67	16.89	4.11
19	141	140	118	23	133.00	112.67	10.61
20		135	125	NA	NA	25.00	5.00
21	137	139	135	4	137.00	2.67	1.63
22	131	134	117	17	127.33	54.89	7.41
	136	139	131	8	135.33	10.89	3.30
24	130	131	126	5	129.00	4.67	2.16
25	124	126	121	5	123.67	4.22	2.05
26	129	141	124	17	131.33	50.89	7.13
27	131	128	123	8	127.33	10.89	3.30
28	136	141	131	10	136.00	16.67	4.08
29	128	124	126	4	126.67	2.56	1.89
30	120	125	124	5	123.33	6.22	2.49
							4.70

TABLE E11

Measurer # 3 FACE WIDTH - Bizygomatic Diameter)

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	135	131	126	9	130.67	13.56	3.68
2	126	118	114	12	119.33	24.89	4.99
3	136	115	115	21	122.00	98.00	9.90
4	131	120	113	18	121.33	54.89	7.41
5	120	116	117	4	117.67	2.89	1.70
6	140	120	120	20	126.67	88.89	9.43
7	145	128	128	17	133.67	64.22	8.01
8	128	117	120	11	121.67	21.56	4.64
9	125	115	105	20	115.00	66.67	8.16
10	135	125	127	10	129.00	18.67	4.32
11	127	115	110	17	117.33	50.89	7.13
12	141	127	125	16	131.00	50.67	7.12
13	126	120	119	7	121.67	9.56	3.09
14	132	117	125	15	124.67	37.56	6.13
15	147	128	131	19	135.33	69.56	8.34
16	131	120	120	11	123.67	26.89	5.19
17	135	125	111	24	123.67	96.89	9.84
18	130	120	113	17	121.00	48.67	6.98
19	139	129	118	21	128.67	73.56	8.58
20		119	115	NA	NA	4.00	2.00
21	139	133	120	19	130.67	62.89	7.93
22	132	126	118	14	125.33	32.89	5.73
	137	126	121	16	128.00	44.67	6.68
	127	122	125	5	124.67	4.22	2.05
25	133	115	108	25	118.67	110.89	10.53
26	137	123	110	27	123.33	121.56	11.03
27	131	128	120	11	126.33	21.56	4.64
28	140	123	115	25	126.00	108.67	10.42
29	127	125	125	2	125.67	0.89	0.94
30	131	115	112	19	119.33	69.56	8.34
							6.30

TABLE E12

Measurer # 4 FACE WIDTH - Bizygomatic Diameter)

	Freehand (Phase I)	Landmark (Phase II)	Trained Landmark (Phase III)	Range	Mean	Variance	Standard Deviation
1	134	144	135	10	137.67	20.22	4.50
2	132	137	125	7	128.00	8.67	2.94
3	139	137	135	4	137.00	2.67	1.63
4	137	131	127	10	131.67	16.89	4.11
5	134	129	127	7	130.00	8.67	2.94
6	145	138	129	16	137.33	42.89	6.55
7	145	149	131	18	141.67	59.56	7.72
8	136	132	115	21	127.67	82.89	9.10
9	126	132	105	27	121.00	134.00	11.58
10	140	141	127	14	136.00	40.67	6.38
11	113	129	126	16	122.67	48.22	6.94
12	144	143	127	17	138.00	60.67	7.79
13	136	136	124	12	132.00	32.00	5.66
14	129	133	123	10	128.33	16.89	4.11
15	147	145	142	5	144.67	4.22	2.05
16	134	126	125	9	128.33	16.22	4.03
17	135	140	129	11	134.67	20.22	4.50
18	130	130	124	6	128.00	8.00	2.83
19	143	140	130	13	137.67	30.89	5.56
20	136	135	129	7	133.33	9.56	3.09
21	145	141	137	8	141.00	10.67	3.27
22	131	135	123	12	129.67	24.89	4.99
-	131	135	134	4	133.33	2.89	1.70
,	135	132	123	12	130.00	26.00	5.10
25	140	135	124	16	133.00	44.67	6.68
26	140	140	125	15	135.00	50.00	7.07
27	135	137	125	12	132.33	27.56	5.25
28	140	142	133	9	138.33	14.89	3.86
29	137	136	132	5	135.00	4.67	2.16
30	135	133	112	23	126.67	108.22	10.40
							5.15

APPENDIX E

Anthropometric Measurement Protocol

ANTHROPOMETRIC MEASUREMENT PROTOCOL

For all anthropometrics, position the subject so that the face is easy to work on. Depending on the heights of technician and subject both usually stand.

MARKING FACIAL LANDMARKS: Under all circumstances, be very careful of the subject's safety when marking and when measuring. In all cases use a hypo-allergenic cosmetic marker. Begin all procedures with a brief explanation to the subject of what you intend to do.

A. Ectocanthion [ECT]. With the subject's eyes closed, mark the outer corner of each eye. This is at a point when the eyefold approaches the leading outer edge of the eye socket, and is called ectocanthion. (See Fig. 1 for this and subsequent points).

B/C. Prozygion [PROZ] and Mid-Temporal Fossa [TEMP]. View the face from the side and hold the prozygion finder so that the arrow at the forward edge just touches the ectocanthion. Be sure the tool is held vertically when the subject holds his/her head "at attention." (See Fig. 2). Mark test two points on the right side, and repeat on the left side.

D. Mid-forehead [FH]. By visual estimation, make a mark halfway up the forehead at the center. This point [FH] falls halfway between the top of the eyebrows and the hairline. This is usually about a thumb-breadth above the eyebrow.

E. Supra-Orbitale, right and left [SOR;SOL]. Having located the mid-forehead point [FH], make a point 2 cm to its left at the same level [SOL], and a point 2 cm to its right at the same level [SOR].

F. Sellion [SEL]. Slide the sellion finder gently upward along the front of the nose until it comes to a stop at the nasal root (that is, butts up against the brow). Be sure the instrument is centered over the bridge of the nose, and work it gently up and down to be sure no skin is bunched up under it. (See Fig. 2). Then tip the instrument back so the upper part rests against the forehead. Mark sellion with marker held horizontally.

G/H. Menton [MEN] and Pogonion [POGO]. By visual estimate, locate the center-line of the chin. Have the subject raise his/her chin 1 inch above its normal position. Slide the menton-finder onto the chin (Fig. 2). Be sure the horizontal blade is flush with the skin of the floor of the jaw, and that the finder is pressed with moderate pressure onto the chin. Mark both points through the holes.

I. Tragion [TRAG]. The ear canal is partly covered from the front by a small flap of cartilage. Go to the top of this and mark a point just where the base of the cartilage joins the underlying tissue (See Fig. 3). Mark right and left.

1. Height

   A. Subject removes shoes.

   B. Subject stands with heels together and touching the wall. Cutouts show subject where to place feet.

C. Buttocks and shoulder blades also touch the wall, but head normally does not touch.

D. Instruct subject to stand tall and at attention, head horizontally, but not to stretch excessively.

E. Bring right angle board down until it rests firmly on the head and read height in cm. (remembering to add 10 cm.).

2. Weight

A. Weight is also taken without shoes, and all subjects should be wearing the same type and amount of clothing if possible. (Note what clothing is worn if it is not all the same.)

B. Weigh a sample of clothing items for later correction to nude weight.

C. Calibrate any scale or balance used against known weight across the range of weights normally encountered (100 to 200 lbs.).

D. Record weight in the standard fashion to the closest 1/4 lb. or 1/10 kilogram.

3. Adjustable Metric Template Circumference

A. Set the template at 150 cm.

B. Subject raises chin 1 inch above normal position, teeth together.

C. Using the center arrow to be sure the template is centered on the face, press the chin area of the template onto the chin. It should be held <u>up</u> and <u>back</u> against the chin with just enough pressure so that there are no gaps between template and skin. Now have the subject or an assistant hold the template in place while you adjust it to the proper size. The top should run across the center of the forehead.

D. A good fit is one in which the forward edge of the template is behind the outer corners of the eyes (points ECT), and above the eyebrows (though it may pass over a few hairs at the outer corners of each brow).

E. The template is at the correct size when its forward or lower edge is resting approximately on the right supraorbital dot [SOR].

F. Where "D" (eye/eyebrow) and "E" (dot) disagree, adjust template according to "D".

G. Once template is adjusted, be sure it is flush with facial skin all around and take the reading.

4. Submandibular Skinfold

A. A skin fold is to be raised beneath the chin on a fore to back axis.

B. At a point just behind menton (M), raise a fold of skin between your thumb and fingertip. It should include only skin and the fat under it.

C. Bring the jaws of the caliper together on the fold a little way from your fingers and allow them to compress the tissue freely. AFTER THE MEASUREMENT, DO NOT LET THE CALIPER JAWS SNAP TOGETHER.

D. Take the best of 3 tries, reading to the 0.5 mm. Where measurements are questionable, read to the next highest 0.5 mm.

5. Bitemporal Fossa [TEMPF]-Minimum Frontal Arc. [Temporal-Forehead Arc]

A. Hold the "0" point of the tape at the subjects right temporal fossa mark [TEMPF]. See Fig. 4 for measurements 5. to 10.

B. Bring the tape obliquely up and forward across the forehead, being sure to keep it above the brow ridges. The top of the tape should pass through the mid-forehead point [FH].

C. The tape is then brought down to the subjects left TEMPF mark and read there. Use just enough pressure to get the tape to touch the skin all along its length.

6. Biprozgyomatic-Menton Arc. [Cheekbone-Chin Arc]

A. Tell subject to close his/her teeth together.

B. Hold the "0" point of the tape at subject's right prozygion point [PROZ] with your left index finger. See Fig.4.

C. Bring the tape down around the chin so that the top of the tape passes just across menton [MEN]. Hold it in place with your left thumb.

D. The tape is then brought up the other side of the face until it reaches the subject's left PROZ point.

E. Put on just enough pressure so the tape is flat on the skin (no gaps), but do not compress or dimple the skin. Check the tape to be sure it touches all three points, and record.

7. Bitragion-Minimum Frontal Arc (Freehand). [Ear-Forehead Arc]

A. Remind subject that the teeth are to be together.

B. Hold the "0" point of the tape at the subject's right tragion [TRAG].

C. Bring the tape obliquely up across the forehead so that the top of the tape passes just below the FH point.

D. Then bring it down across the left temple to the left TRAG and again adjust it to all points, keeping the tape just flat to the skin without compression.

8. Bitragion-Pogonion Arc (Freehand). [Ear-Chin Arc]

A. Remind subject that the teeth are to be together.

B. Hold the "0" point of the tape at the subject's right tragion [TRAG].

C. Bring the tape down around the chin so that the <u>top</u> of the tape passes just below pogonion point [POGO].

D. The tape is then brought up the other side of the face until it reaches the subject's left tragion point [TRAG].

E. Put just enough pressure on the skin without compressing it. Check the tape to be sure it passes all three points correctly.

9. Bitragion-Minimum Frontal Arc (Tape Holder). [Ear-Forehead Arc, Holder]

A. Place the tape holder in the ears, keeping the two arms of the instrument to the rear of the head.

B. Repeat measurement "7." above, but take your measurement where the tape crosses the outer edge of the steel washer. The top of the tape is even with the top arm of the holder.

10. Bitragion-Pogonion Arc (Tape Holder). [Ear-Chin Arc, Holder]

A. With the tape holder still in place, repeat measurement "8." above.

B. Remove the tape holder and clean the ear plugs with an ethanol sponge.

11. Bizygomatic Diameter (Calipers). [Face Width]

A. Hold the spreading calipers near the measuring "olives" with your fingertips. Feel for the bone with your fingers.

B. Measure the maximum horizontal breadth of the face across the zygomatic arches. See Fig. 5 for measurements 11 to 16.

C. This is usually about where the sideburn crosses the arch, about one inch in front of the ear.

D. Use firm but not painful pressure. The caliper is stopped by bone on both sides.

12. Biprozygomatic Diameter (Calipers). [Cheekbone Width]

A. This measurement is similar to "11", but is a little more forward.

B. In the same way as before, measure the maximum diameter across the cheekbone, placing your caliper "olives" over both PROZ points (Fig. 1).

13. Menton-Sellion Diameter (Calipers). [Face Height]

A. Tell the subject to place his/her teeth together.

B. With the finger tips of one hand on the fixed caliper tip, place the top of the SEL landmark (high on the bridge of the nose), and hold it in place.

C. With the other finger tips hold the moveable branch of the calipers by the tip and bring it down until it touches point MEN at the bottom of the mid-chin area.

D. Take the measurement with moderate but not painful pressure so the caliper is stopped by the chin bone (revised).

14. Bizygomatic Diameter (Gauge). [Face Width, Gauge]

A. Repeat measurement "11" exactly in all details.

B. However, the gauge will have to be held against a metric scale to determine the actual measurement.

15. Biprozygomatic Diameter (Gauge). [Cheekbone Width, Gauge]

A. Repeat measurement "12" as above.

16. Menton-Sellion Diameter (Gauge). [Face Height, Gauge]

A. Repeat measurement "13" as above.

B. In the case, be especially careful to take the dimension off the gauge at the same point.

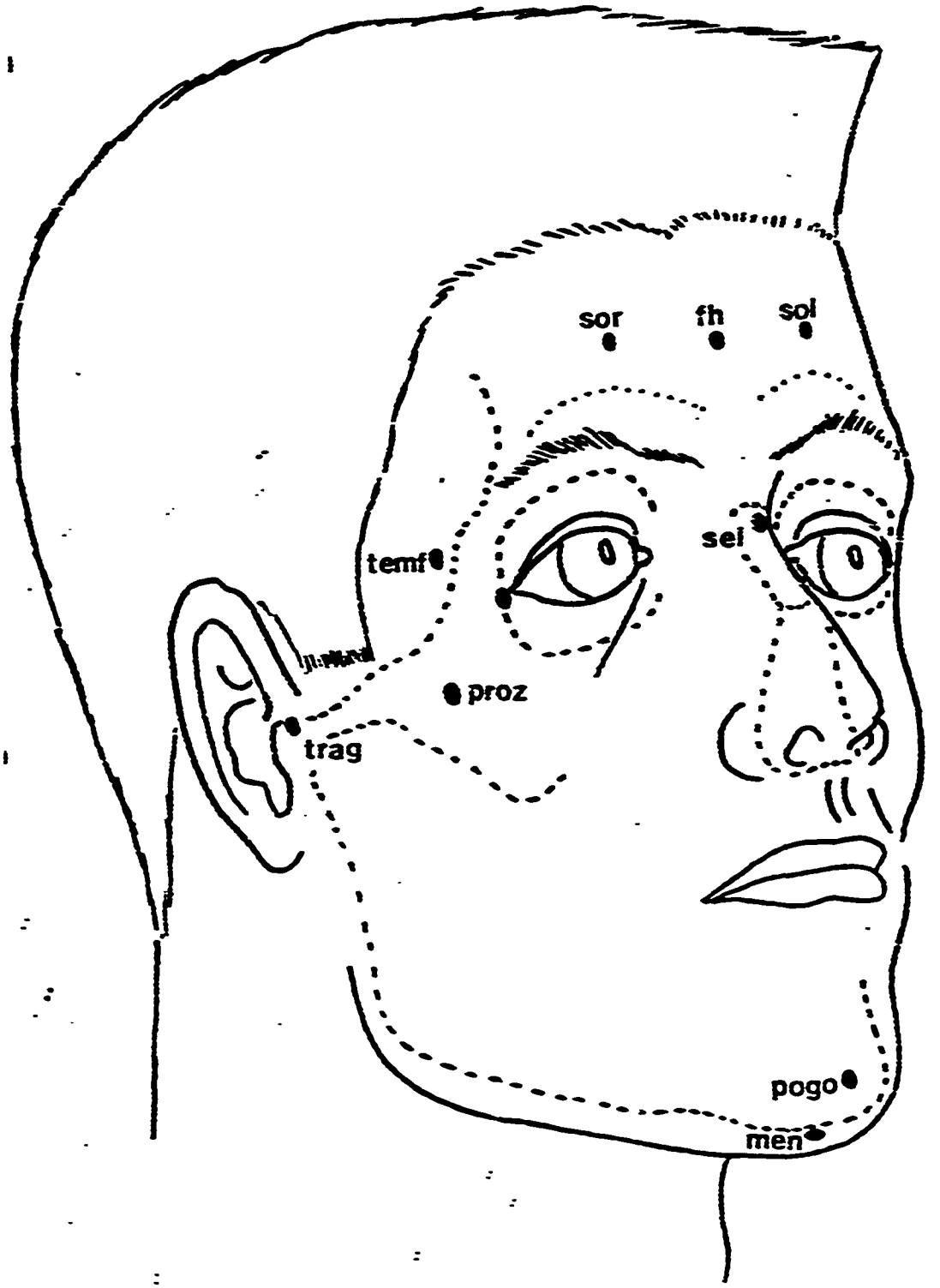


Fig. 1

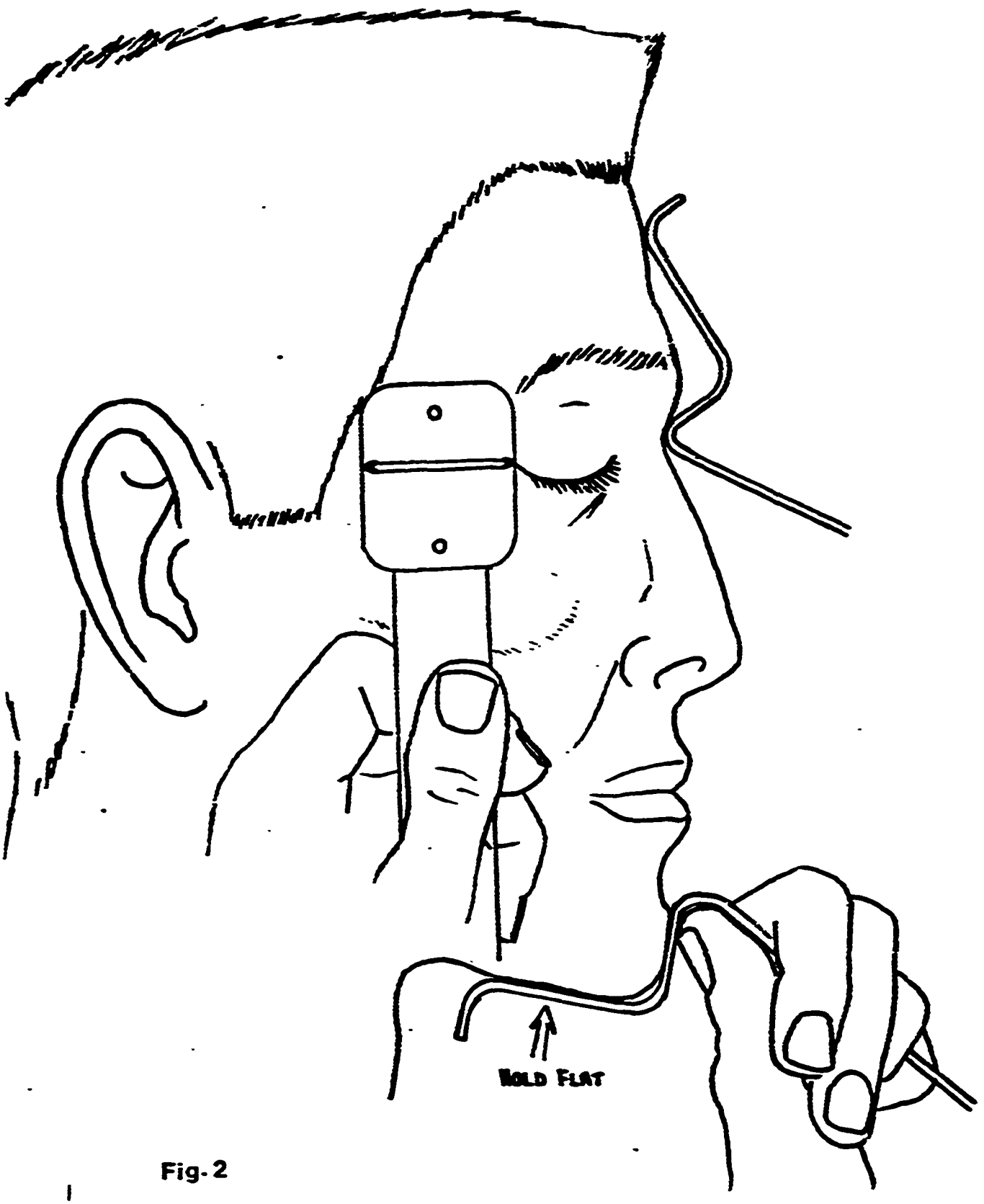


Fig. 2

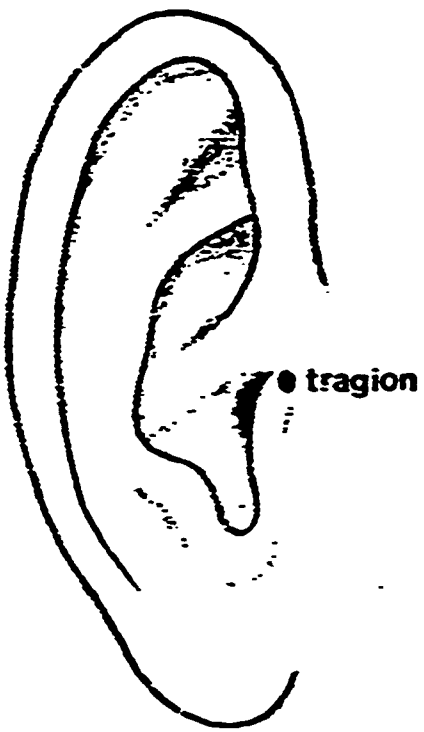


Fig. 3

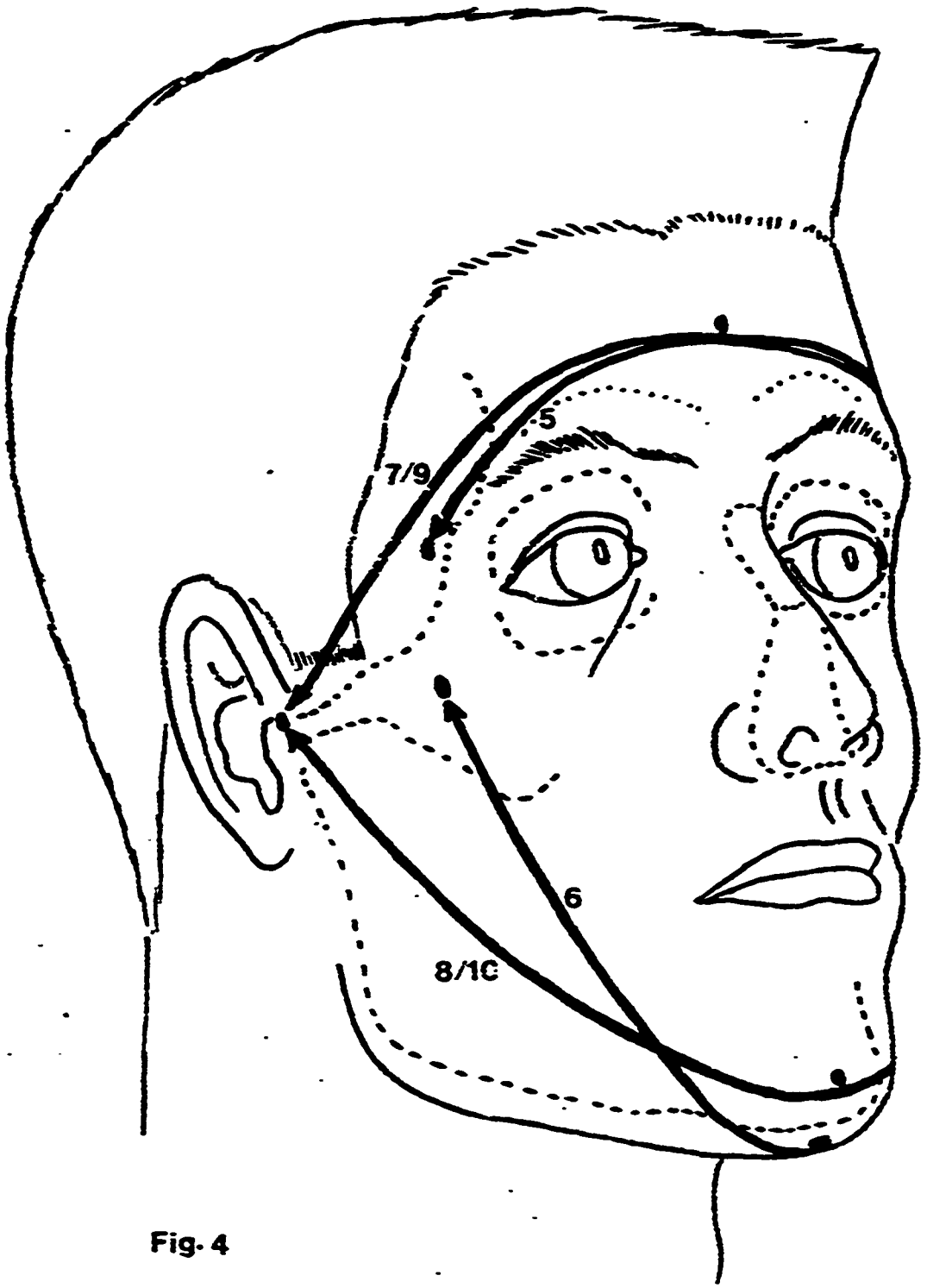


Fig. 4

(revised)

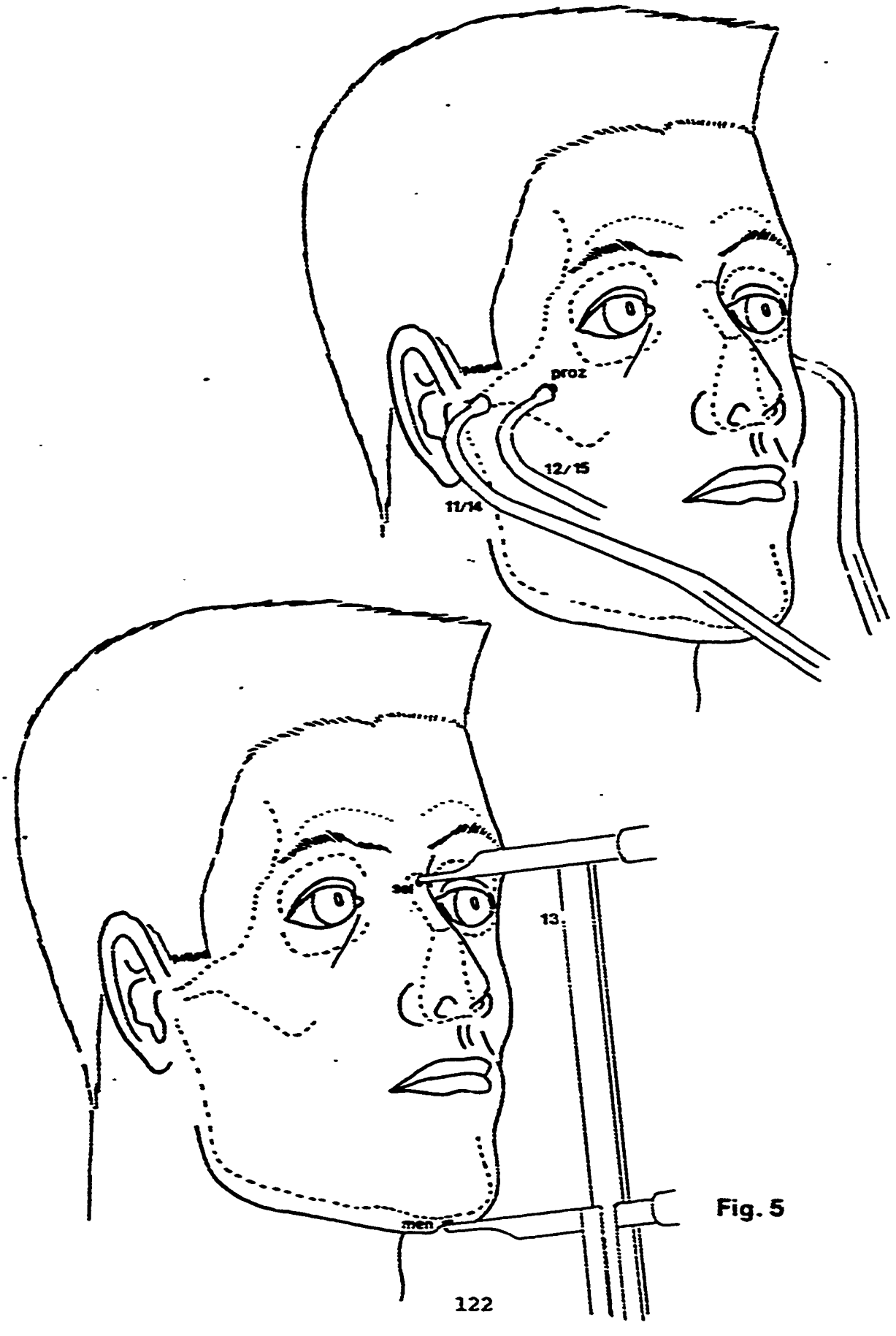


Fig. 5

APPENDIX F

CRDEC Raw Test Data

APPENDIX G1

US-10 Protection Factor Data and Summary

US-10

SUBJECT #	1	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-2-SI	M-2-SI QAF	----------
		20000	2180	0
SUBJECT #	2	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		S-1-CR	TM M-1-BE	----------
		19600	18700	0
SUBJECT #	3	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-2	M-2-BE	----------
		11100	20000	0
SUBJECT #	4	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	TM M-1-CR	L-1-SI
		0	396	20000
SUBJECT #	5	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-1-SI	M-1-SI QAF	----------
		3240	148	0
SUBJECT #	6	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	M-2-SI QAF	L-1-BE
		0	2540	20000
SUBJECT #	7	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-1-BE	M-4-AU	----------
		2770	20000	0
SUBJECT #	8	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	M-3-BE	TM L-1-SI
		0	19800	1780

SUBJECT #	9	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-BE	L-1-SI
		0	20000	7340
SUBJECT #	10	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2-ST	M-3-BE	----------
		20000	20000	0
SUBJECT #	11	[illegible]-10	US-10	US-10
		[illegible]ALL	MEDIUM	LARGE
Mask ID #		[illegible]-2	TM M-4-AU	----------
		12500	2240	0
SUBJECT #	12	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-BE	TM L-1-BE
		0	20000	1670
SUBJECT #	13	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-1-BE
		0	20000	20000
SUBJECT #	14	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	M-3-BE QAF	----------
		20000	4920	0
SUBJECT #	15	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	M-1-SI QAF	----------
		20000	644	0
SUBJECT #	16	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-CR	L-2
		0	13100	20000

SUBJECT #	17	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	M-2-SI QAF	----------
		2510	358	0
SUBJECT #	18	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-SI	L-2
		0	20000	20000
SUBJECT #	19	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-BE	L-1-BE
		0	20000	687
SUBJECT #	20	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1-BE	TM L-1-BE
		0	20000	20000
SUBJECT #	21	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-SI QAF	TM L-2
		0	2000	20000
SUBJECT #	22	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-SI	M-3-BE QAF	----------
		20000	250	0
SUBJECT #	23	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-1-BE	----------
		20000	20000	0
SUBJECT #	24	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-CR	M-3-BE QAF	----------
		20000	1160	0

SUBJECT #	25	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	TM M-1-CR	----------
		10100	9010	0
SUBJECT #	26	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	M-2-S1 QAF	----------
		20000	303	0
SUBJECT #	27	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-3-BE QAF	L-1
		9	102	20000
SUBJECT #	28	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	M-2-BE QAF	----------
		20000	149	0
SUBJECT #	29	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-CR	M-1-CR QAF	----------
		20000	332	0
SUBJECT #	30	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-S1	M-1-S1 QAF	----------
		20000	5950	0
SUBJECT #	31	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	M-2-S1 QAF	----------
		20000	460	0
SUBJECT #	32	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-BE	M-1-S1	----------
		2030	20000	0

SUBJECT #	33	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-SI	M-1-SI	----------
		20000	18400	0
SUBJECT #	34	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2-SI	M-3-BE QAF	----------
		20000	100	0
SUBJECT #	35	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-4	M-2-BE	----------
		16700	20000	0
SUBJECT #	36	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-4-AU	----------
		20000	264	0
SUBJECT #	37	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-2-BE	----------
		20000	17700	0
SUBJECT #	38	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-BE	M-8	----------
		20000	20000	0
SUBJECT #	39	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-BE QAF	TM L-1-BE
		0	156	15600
SUBJECT #	40	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	TM M-4-AU	----------
		1380	899	0

SUBJECT #	41	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-BE	M-3-BE QAF	----------
		1170	615	0
SUBJECT #	42	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	M-3-BE QAF	----------
		20000	1100	0
SUBJECT #	43	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-SE QAF	L-1-SI
		0	959	20000
SUBJECT #	44	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1-SE QAF	L-2
		0	4410	17300
SUBJECT #	45	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-S1	M-2-BE QAF	----------
		2190	5690	0
SUBJECT #	46	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	M-4-AU QAF	----------
		20000	3330	0
SUBJECT #	47	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-1-BE	----------
		20000	20000	0
SUBJECT #	48	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-2	----------
		14200	7650	0

SUBJECT #	49	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-5	----------
		18800	20000	0
SUBJECT #	50	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1-BE
		0	19500	20000
SUBJECT #	51	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-BE	L-1-51
		0	455	19900
SUBJECT #	52	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	----------	----------
		0	0	0
SUBJECT #	53	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-S1	TM M-1-BE	----------
		100	20000	0
SUBJECT #	54	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-2	----------
		20000	1310	0
SUBJECT #	55	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-4 CAF	TM M-2	----------
		6720	20000	0
SUBJECT #	56	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	TM M-3	----------
		20000	519	0

SUBJECT #	57	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	TM M-2	L-1-BE
		0	20000	19300
SUBJECT #	58	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	TM M-1-BE	L-1-SI
		0	20000	7460
SUBJECT #	59	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		S-1-SI	TM M-2-BE	----------
		20000	100	0
SUBJECT #	60	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		S-2	TM M-5	----------
		20000	3120	0
SUBJECT #	61	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	TM M-7	L-2
		0	15600	19700
SUBJECT #	62	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-1-BE	M-1-BE	----------
		20000	20000	0
SUBJECT #	63	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		S-4 QAF	TM M-8	----------
		2810	326	0
SUBJECT #	64	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		TM S-1	M-7	----------
		1200	18100	0

SUBJECT #	65	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	TM M-7	----------
		20000	20000	0
SUBJECT #	66	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-8	----------
		20000	20000	0
SUBJECT #	67	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-1-SI
		0	20000	8600
SUBJECT #	68	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2	TM L-1-SI
		0	20000	17700
SUBJECT #	69	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-3	----------
		14500	20000	0
SUBJECT #	70	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-4 OAF	TM M-2	----------
		3050	4390	0
SUBJECT #	71	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-1-BE
		0	20000	5940
SUBJECT #	72	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-SI	TM M-2-BE	----------
		20000	20000	0

SUBJECT #	73	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-8	----------
		14700	1270	0
SUBJECT #	74	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-BE	L-1-SI
		0	19000	143
SUBJECT #	75	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-SI	M-1-BE	----------
		17900	17100	0
SUBJECT #	76	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	TM M-2	----------
		18700	20000	0
SUBJECT #	77	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3	L-2
		0	20000	20000
SUBJECT #	78	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-1-BE
		0	20000	1970
SUBJECT #	79	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2-SI	TM M-2	----------
		4530	20000	0
SUBJECT #	80	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-1-BE
		0	20000	742

SUBJECT #	81	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3 QAF	L-1-SI
		0	111	20000
SUBJECT #	82	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-SI	TM M-7	----------
		20000	18700	0
SUBJECT #	83	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-8 QAF	----------
		20000	476	0
SUBJECT #	84	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-5	----------
		20000	6700	0
SUBJECT #	85	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2-SI	M-5	----------
		620	183	0
SUBJECT #	86	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	TM M-2-BE	----------
		20000	20000	0
SUBJECT #	87	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-5	----------
		20000	20000	0
SUBJECT #	88	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-CR	M-7	----------
		20000	20000	0

SUBJECT #	89	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-BE	TM L-1-SI
		0	1210	11600
SUBJECT #	90	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	TM M-2	----------
		17400	20000	0
SUBJECT #	91	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-SI	M-8	----------
		20000	20000	0
SUBJECT #	92	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-2	----------
		20000	20000	0
SUBJECT #	93	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1-BE
		0	14900	20000
SUBJECT #	94	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-2-BE	----------
		20000	2550	0
SUBJECT #	95	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-CR	TM M-8	----------
		20000	20000	0
SUBJECT #	96	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-3	----------
		20000	19200	0

SUBJECT #	97	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-SI	M-2	----------
		20000	20000	0
SUBJECT #	98	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-8	----------
		10300	198	0
SUBJECT #	99	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-BE	L-2
		0	20000	1180
SUBJECT #	100	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1-CR	M-2-BE	----------
		20000	436	0
SUBJECT #	101	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2	L-1-SI
		0	20000	1460
SUBJECT #	102	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-7	----------
		20000	8330	0
SUBJECT #	103	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-7	L-1-SI
		0	8090	19000
SUBJECT #	104	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-8	----------
		20000	20000	0

SUBJECT #	105	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		L-1-SI	TM M-1-BE	----------
		16000	20000	0
SUBJECT #	106	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S	TM M-5	----------
		228	19400	0
SUBJECT #	107	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1-BE	TM M-3	----------
		20000	16500	0
SUBJECT #	108	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-2-SI	TM M-2	----------
		20000	20000	0
SUBJECT #	109	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-7	----------
		20000	20000	0
SUBJECT #	110	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3	L-1-BE
		0	10800	766
SUBJECT #	111	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-2
		0	20000	20000
SUBJECT #	112	US-10	US-10	US-10
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2	L-1
		0	13600	793

SUBJECT #	113	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	M-5	TM L-1-SI
		0	7490	20000
SUBJECT #	114	US-10 SMALL	US-10 MEDIUM	US-10 LARGE
Mask ID #		----------	TM M-8	L-1-SI
		0	20000	2540

US-10 SIZE DETERMINATION DATA

	Subject #	Pf	Photo	Best Fit	Comments
	1	----------		QAF	----------
+	2	S-M	M	M	
+	3	S-M	S-M	S-M	
+	4	L	M-L	L	M PF LOW
	5	----------		QAF	----------
	6	----------		QAF	----------
+	7	M	S-M	M	S PF LOW
+	8	M	M-L	M	L PF LOW
+	9	M-L	M	M	L NOSE CUP HIGH
+	10	S-M	S-M	M	
+	11	S	S-M	S	M PF LOW
+	12	M	M-L	M	L PF LOW
+	13	M-L	M-L	M	
	14	----------		QAF	----------
	15	----------		QAF	----------
+	16	M-L	M-L	L	
	17	----------		QAF	----------
+	18	M-L	M-L	M	
+	19	M	M-L	M	M PF LOW
+	20	M-L	M-L	L	
	21	----------		QAF	----------
	22	----------		QAF	----------
+	23	S-M	S-M	M	
	24	----------		QAF	----------

	Subject #	Pf	Photo	Best Fit	Comments
+	25 (70)	S-M	M	M	
	26	----------	----------	QAF	----------
	27 (61)	----------	----------	QAF	----------
	28 (72)	----------	----------	QAF	----------
	29 (65)	----------	----------	QAF	----------
	30 (63)	----------	----------	QAF	----------
	31	----------	----------	QAF	----------
+	32	M	S-M	M	S PF SLIGHTLY LOW
+	33 (62)	S-M	S-M	M	
	34	----------	----------	QAF	----------
+	35	S-M	S-M	M	
+	36	S	S	S	
+	37 (66)	S-M	S-M	M	
+	38	S-M	S-M	M	
	39 (68)	----------	----------	QAF	----------
+	40	S	S-M	S	PF LOW ON BOTH
	41 (64)	----------	----------	QAF	----------
	42 (59)	----------	----------	QAF	----------
	43	----------	----------	QAF	----------
	44 (67)	----------	----------	QAF	----------
	45	----------	----------	QAF	----------
	46 (69)	----------	----------	QAF	----------
+	47	S-M	S-M	M	
+	48	S-M	M	M	
+	49	S-M	M	M	
+	50	M-L	M	M	

	Subject #	Pf	Photo	Best Fit	Comments
+	51	L	M-L	L	M PF LOW
	52	NO TEST			
+	53	M	M	M	
+	54	S	S-M	S	M PF LOW
+	55	S-M	S-M	M	
+	56	S	S-M	S	M PF LOW
+	57	M-L	M-L	M	
+	58	M-L	M-L	M	
+	59 (42)	S	S-M	S	M PF LOW
+	60	S	S-M	S	M PF SLIGHTLY LOW
+	61 (27)	M-L	M-L	M-L	
	62 (33)	S-M	S-M	M	
+	63 (30)	S	S-M	S	M PF LOW
+	64 (41)	M	S-M	M	S PF LOW
+	65 (29)	S-M	S-M	S-M	
	66 (37)	S-M	S-M	M	
+	67 (44)	M-L	M-L	M	
+	68 (39)	M-L	M-L	M	
+	69 (46)	S-M	S-M	M	
	70 (70)	----------	----------	QAF	----------
+	71	M	M	M	L PF SLIGHTLY LOW
+	72 (28)	S-M	S-M	M	
+	73	S	S	S	M PF LOW
+	74	M	M	M	L PF LOW
+	75	S-M	S-M	S-M	
+	76	S-M	M	M	

	Subject #	Pf	Photo	Best Fit	Comments
+	77	M-L	M-L	M	
+	78	M	M-L	M	L PF LOW
+	79	M	S-M	S	S PF SLIGHTLY SOW
+	80	M	M-L	M	L PF LOW
+	81	L	M-L	L	M PF LOW
+	82	S-M	M	M	S NOSE CUP LOW
+	83	S	S-M	S	M PF LOW
	84 (56)	S-M	S-M	M	
+	85	--	S	S	PF LOW ON BOTH
+	86	S-M	M	M	
+	87 (102)	S-M	S-M	M	
+	88	S-M	S-M	M	
+	89	L	L	L	
+	90	S-M	M	M	
+	91	S-M	S-M	M	
+	92	S-M	M	M	
+	93	M-L	M-L	M	
+	94	S	S-M	S	M PF SLIGHTLY LOW
+	95	S-M	S-M	M	
+	96	S-M	M	M	
+	97	S-M	S-M	M	
+	98	S	S-M	S	M PF LOW
+	99	M	M-L	M	L PF LOW
	100 (36)	S	S-M	S	M PF LOW
+	101	M	M	M	L PF LOW
	102 (87)	S-M	S-M	M	

Subject #	Pf	Photo	Best Fit	Comments
+ 103	M-L	M-L	M	
+ 104	S-M	M	M	
+ 105	S-M	M	M	
+ 106	M	M	M	S PF LOW
+ 107	S-M	S-M	M	
+ 108	S-M	S-M	S	
+ 109	S-M	S-M	M	
+ 110	M	M	M	L PF LOW
+ 111	M-L	M-L	L	
+ 112	M	M	M	
+ 113	M-L	M-L	L	
+ 114	M	M-L	M	L PF SLIGHTLY LOW

APPENDIX G2

Scott XM40 Protection Factor Data and Summary

SCOTT- XM40

SUBJECT #	1	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5-Y	TM M-1	----------
		9610	156	0
SUBJECT #	2	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5-W	TM M-6	----------
		20000	20000	0
SUBJECT #	3	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-7	----------
		311	20000	0
SUBJECT #	4	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-12	----------
		20000	20000	0
SUBJECT #	5	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-3	M-1	----------
		20000	14500	0
SUBJECT #	6	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5-Y	L-1-S!
		0	7790	455
SUBJECT #	7	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-5-B	----------
		20000	20000	0
SUBJECT #	8	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-12	L-1
		0	20000	20000

SUBJECT #	9	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		----------	TM M-0	L-1-AV QAF
		0	19500	303
SUBJECT #	10	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		TM S-6	M-8	----------
		12400	20000	0
SUBJECT #	11	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		S-6	TM M-8	----------
		20000	20000	0
SUBJECT #	12	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		----------	M-12 QAF	L-3
		0	101	[illegible]
SUBJECT #	13	SCOTT-XM40 SMALL	[illegible]	[illegible] LARGE
Mask ID #		----------	[illegible]	L-4
		[illegible]	[illegible]	20000
SUBJECT #	14	[illegible]	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		[illegible]	M-6	----------
		6-10	20000	0
SUBJECT #	15	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		TM S-7	M-5-B	----------
		20000	20000	0
SUBJECT #	16	SCOTT-XM40 SMALL	SCOTT-XM40 MEDIUM	SCOTT-XM40 LARGE
Mask ID #		----------	TM M-[illegible]	L-[illegible]
		0	18100	19800

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SUBJECT #	17	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3-Y	TM M-8	----------
		2340	20000	0
SUBJECT #	18	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	M-5-Y QAF	----------
		19600	1570	0
SUBJECT #	19	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-12	----------
		20000	17000	0
SUBJECT #	20	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-8	TM L-1-SI
		0	20000	20000
SUBJECT #	21	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-1-SI
		0	12800	5600
SUBJECT #	22	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-12 QAF	----------
		19200	2870	0
SUBJECT #	23	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3-W	TM M-5-B	----------
		20000	20000	0
SUBJECT #	24	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2 QAF	M-10	----------
		722	20000	0

SUBJECT #	25	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-1	----------
		19600	20000	0
SUBJECT #	26	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-2 QAF	TM M-5-B	----------
		4530	20000	0
SUBJECT #	27	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-7	L-10
		0	20000	20000
SUBJECT #	28	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-5-Y QAF	L-1-AU QAF
		0	5450	286
SUBJECT #	29	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-3	M-8	----------
		20000	20000	0
SUBJECT #	30	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-6	----------
		20000	20000	0
SUBJECT #	31	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-0	----------
		20000	20000	0
SUBJECT #	32	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-6	M-1	----------
		20000	4520	0

SUBJECT #	33	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5-W	TM M-6	----------
		20000	19000	0
SUBJECT #	34	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	M-12 OAF	----------
		3230	436	0
SUBJECT #	35	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5-4	TM M-8	----------
		403	1110	0
SUBJECT #	36	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-6	----------
		20000	1200	0
SUBJECT #	37	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-10	----------
		637	8400	0
SUBJECT #	38	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-2	----------
		19800	20000	0
SUBJECT #	39	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-0	TM L-10
		0	5620	10700
SUBJECT #	40	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-10
		0	4670	20000

SUBJECT #	41	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2 QAF	M-8 QAF	----------
		124	461	0
SUBJECT #	42	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-1-SI
		0	20000	2050
SUBJECT #	43	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-8	----------
		2340	20000	0
SUBJECT #	44	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-10
		0	20000	20000
SUBJECT #	45	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-0	----------
		7030	18600	0
SUBJECT #	46	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-7	L-1-AU QAF
		0	20000	16°
SUBJECT #	47	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-6	----------
		20000	20000	0
SUBJECT #	48	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-5	----------
		20000	8730	0

UBJECT #	49	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-7	----------
		20000	4530	0
SUBJECT #	50	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-1
		0	20000	20000
SUBJECT #	51	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-10
		0	115	20000
SUBJECT #	52	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	----------	----------
		0	0	0
SUBJECT #	53	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
lask ID #		----------	TM M-0	L-1-S1 OAF
		0	20000	1570
SUBJECT #	54	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3 OAF	TM M-7	----------
		510	20000	0
SUBJECT #	55	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-3
		0	20000	182
SUBJECT #	56	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-6	----------
		20000	20000	0

SUBJECT #	57	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3-4 QAF	M-1-BE QAF	----------
		160	733	0
SUBJECT #	58	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-SI	L-1
		0	1350	18600
SUBJECT #	59	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-1-SI
		0	20000	1360
SUBJECT #	60	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-7	----------
		2140	7350	0
SUBJECT #	61	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-3
		0	1380	18800
SUBJECT #	62	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3-W	TM M-5	----------
		20000	20000	0
SUBJECT #	63	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-0	----------
		20000	20000	0
SUBJECT #	64	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-3 QAF	M-0	----------
		945	20000	0

SUBJECT #	65	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-6	M-7	----------
		20000	20000	0
SUBJECT #	66	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-3	TM M-6	----------
		20000	20000	0
SUBJECT #	67	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-3
		0	20000	20000
SUBJECT #	68	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-8	TM L-3
		0	14300	20000
SUBJECT #	69	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-10
		0	20000	5220
SUBJECT #	70	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-7	----------
		20000	7810	0
SUBJECT #	71	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1	L-1-SI OAF
		0	599	2190
SUBJECT #	72	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1-SI OAF
		0	20000	709

SUBJECT #	73	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-8	M-7	----------
		20000	20000	0
SUBJECT #	74	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-0	----------
		20000	622	0
SUBJECT #	75	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-2-SI	----------
		13400	1690	0
SUBJECT #	76	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-7	----------
		747	20000	0
SUBJECT #	77	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-10
		0	662	19000
SUBJECT #	78	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-3
		0	20000	653
SUBJECT #	79	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-SI	L-10
		0	20000	20000
SUBJECT #	90	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-0	L-1
		0	20000	20000

SUBJECT #	81	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-2-SI	TM L-1
		0	20000	20000
SUBJECT #	82	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-8	TM L-10
		0	20000	20000
SUBJECT #	83	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-0	----------
		20000	18600	0
SUBJECT #	84	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-1-BE	----------
		20000	10200	0
SUBJECT #	85	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-8	----------
		20000	12800	0
SUBJECT #	86	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-2
		0	20000	20000
SUBJECT #	87	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-5	----------
		20000	10500	0
SUBJECT #	88	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-2
		0	1720	7510

SUBJECT #	89	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1	TM L-10
		0	20000	20000
SUBJECT #	90	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-0	----------
		20000	20000	0
SUBJECT #	91	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-3
		0	20000	561
SUBJECT #	92	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1	L-10
		0	255	20000
SUBJECT #	93	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-6	TM L-3
		0	2040	182
SUBJECT #	94	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-8	----------
		20000	20000	0
SUBJECT #	95	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-8	----------
		16700	20000	0
SUBJECT #	96	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5-W	M-8	----------
		20000	711	0

SUBJECT #	97	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-6	M-1-BE	----------
		100	100	0
SUBJECT #	98	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-1-BE	----------
		20000	16000	0
SUBJECT #	99	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2-SI	L-10
		0	2210	20000
SUBJECT #	100	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7	M-2-SI	----------
		20000	2050	0
SUBJECT #	101	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-5	----------
		5100	20000	0
SUBJECT #	102	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-0	----------
		20000	1060	0
SUBJECT #	103	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1	TM L-2
		0	20000	19600
SUBJECT #	104	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	----------	TM L-1
		0	0	20000

SUBJECT #	105	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-5	----------
		7500	20000	0
SUBJECT #	106	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-1-BE	----------
		20000	7710	0
SUBJECT #	107	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-6	M-2-SI	----------
		5070	20000	0
SUBJECT #	108	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-8	----------
		20000	20000	0
SUBJECT #	109	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-1-BE	L-10
		0	2070	20000
SUBJECT #	110	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-6	TM M-1	----------
		20000	3320	0
SUBJECT #	111	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	----------	TM L-2
		0	0	949
SUBJECT #	112	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-0	----------
		20000	20000	0

SUBJECT #	113	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-6	TM L-1
		----------	----------	----------
		0	20000	111
SUBJECT #	114	SCOTT-XM40	SCOTT-XM40	SCOTT-XM40
		SMALL	MEDIUM	LAPGE
Mask ID #		----------	TM M-7	L-1
		----------	----------	----------
		0	5510	100

SCOTT-XM40 SIZE DETERMINATION

	Subject #	Pf	Photo	Best Fit	Comments
+	1	S	S-M	S	M PF LOW
+	2	S-M	S-M	M	
+	3	M	M	M	S PF LOW
+	4	S-M	S-M	S-M	
+	5	S-M	S	S	
+	6	M	M	M	S PF LOW
+	7	S-M	S-M	M	
+	8	M-L	M-L	M	
+	9	M	M	M	L PF LOW
+	10	S-M	S-M	S	
+	11	S-M	S-M	M	
	12	----------	----------	QAF	----------
	13	----------	----------	QAF	----------
+	14	S-M	S-M	M	
+	15	S-M	S-M	S	
+	16	M-L	M-L	M	
+	17	M	M	M	S PF LOW
	18	----------	----------	QAF	----------
+	19	S-M	S-M	S	
+	20	M-L	M-L	L	
+	21	M	M	M	L PF SLIGHTLY LOW
	22	----------	----------	QAF	----------
+	23	S-M	S-M	M	

	24	---------- QAF ----------			
	Subject #	Pf	Photo	Best Fit	Comments
+	25 (70)	S-M	S-M	M	
	26	---------- QAF ----------			
+	27 (61)	M-L	M-L	M	
	28 (72)	---------- QAF ----------			
+	29 (65)	S-M	S-M	S-M	
+	30 (63)	S-M	S-M	S-M	
+	31	S-M	S-M	M	
+	32	S	S	S	M PF LOW
+	33 (62)	S-M	S-M	M	
	34	---------- QAF ----------			
+	35	M	M	M	BOTH PF LOW
+	36 (100)	S	S	S	M PF LOW
+	37 (66)	M	M	M	S PF LOW
+	38	S-M	S-M	M	
+	39 (68)	L	L	L	M PF LOW
+	40	L	M-L	L	M PF SLIGHTLY LOW
	41 (64)	---------- QAF ----------			
+	42 (59)	M	M	M	L PF LOW
+	43	M	M	M	S PF LOW
+	44 (67)	M-L	M-L	M	
+	45	S-M	M	M	
	46 (69)	---------- QAF ----------			
+	47	S-M	S-M	M	
+	48	S-M	S	S	
+	49	S	S-M	S	M PF SLIGHTLY LOW
+	50	M-L	M-L	M-L	

	Subject #	Pf	Photo	Best Fit	Comments
+	51	L	M-L	L	M PF LOW
	52	NO TEST			
	53	----------	QAF	----------	
	54	----------	QAF	----------	
+	55	M	M-L	M	L PF LOW
+	56	S-M	M	M	
	57	----------	QAF	----------	
+	58	L	M-L	L	M PF LOW
	59 (42)	M	M	M	L PF LOW
+	60	M	M	M	S PF LOW
	61 (27)	L	M-L	L	M PF LOW
	62 (33)	S-M	S-M	M	
	63 (30)	S-M	S-M	M	
	64 (41)	----------	QAF	----------	
	65 (29)	S-M	S-M	S-M	
	66 (37)	S-M	S-M	S-M	
	67 (44)	M-L	M-L	M-L	
	68 (39)	M-L	M-L	L	
	69 (46)	M	M-L	M	L PF SLIGHTLY LOW
	70 (25)	S-M	S-M	S	
	71	----------	QAF	----------	
	72 (28)	----------	QAF	----------	
+	73	S-M	S-M	S	
+	74	S	S-M	S	M PF LOW
+	75	S	S-M	S	M PF LOW
+	76	M	M	M	S PF LOW

	Subject #	Pf	Photo	Best Fit	Comments
+	77	L	M-L	L	M PF LOW
+	78	M	M	M	L PF LOW
+	79	M-L	M-L	M	
+	80	M-L	M-L	M	
+	81	M-L	M-L	M-L	
+	82	M-L	M-L	M-L	
+	83	S-M	S-M	S-M	
	84 (56)	S-M	S-M	S	
+	85	S-M	S-M	M	
+	86	M-L	M-L	M-L	
+	87 (102)	S-M	S-M	S	
+	88	L	M-L	L	M PF LOW
+	89	M-L	M-L	M-L	
+	90	S-M	S-M	M	
+	91	M	M-L	M	L PF LOW
+	92	L	M-L	L	M PF LOW
+	93	M	M-L	M	PF LOW ON BOTH
+	94	S-M	S-M	S	
+	95	S-M	S-M	M	
+	96 (54)	S	S	S	M PF LOW
+	97		S-M	HARD TO EVALUATE PF VERY LOW ON BOTH	
+	98	S-M	S-M	S	
+	99	L	M-L	L	M PF LOW
	100 (36)	S	S	S	M PF LOW
+	101	M	S-M	M	S PF SLIGHTLY LOW
	102 (87)	S	S-M	S	M PF LOW

Subject #	Pf	Photo	Best Fit	Comments
+ 103	M L	M-L	M-L	
+ 104	L	M-L	L	PF DATA ON M MASK LOST
+ 105	S-M	S-M	M	
+ 106	S-M	S	S	
+ 107	M	S-M	M	S PF SLIGHTLY LOW
+ 108	S-M	S	S	
+ 109	L	M-L	L	M PF LOW
+ 110	S	S-M	S	M PF LOW
111	DATA MISSING			
+ 112	S-M	S-M	M	
+ 113	M	M-L	M	L PF LOW
+ 114	M	M	M	L PF LOW

APPENDIX G3

ILC XM40 Protection Factor Data and Summary

ILC-XM40

SUBJECT #	1	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-14	M-6	----------
		181	20000	0
SUBJECT #	2	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-1	M-25	----------
		20000	20000	0
SUBJECT #	3	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-[illegible]	TM M-6	----------
		10500	6840	0
SUBJECT #	4	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-16	TM M-5-B	----------
		8500	7500	0
SUBJECT #	5	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-18	TM M-3 DAF	----------
		1140	203	0
SUBJECT #	6	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	TM M-1	L-3
		0	1680	100
SUBJECT #	7	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-19	M-1	----------
		595	20000	0
SUBJECT #	8	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	M-2	TM L-1-CR
		0	20000	20000

SUBJECT #	9	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-4	TM M-6	----------
		898	514	0
SUBJECT #	10	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-14	M-2	----------
		17600	2450	0
SUBJECT #	11	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1?	TM M-5	----------
		18300	4610	0
SUBJECT #	12	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1-8E
		0	20000	20000
SUBJECT #	13	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-19	M-16 QAF	----------
		15000	886	0
SUBJECT #	14	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-4	M-25 QAF	----------
		15300	1860	0
SUBJECT #	15	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-2	----------
		20000	1990	0
SUBJECT #	16	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-5	----------
		20000	20000	0

SUBJECT #	17	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-19	M-6	----------
		452	5990	0
SUBJECT #	18	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-1-BE
		0	1050	20000
SUBJECT #	19	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-8	----------
		20000	437	0
SUBJECT #	20	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-1	TM L-1-CR
		0	20000	1520
SUBJECT #	21	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-8	TM L-1-BE
		0	791	20000
SUBJECT #	22	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-4	M-25	----------
		20000	20000	0
SUBJECT #	23	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-4	M-16 QAF	----------
		20000	1370	0
SUBJECT #	24	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-14	M-5	----------
		20000	20000	0

SUBJECT #	25	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-5	----------
		957	1480	0
SUBJECT #	26	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-1	----------
		906	20000	0
SUBJECT #	27	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-2	L-1-CR
		0	20000	2020
SUBJECT #	28	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-25	----------
		14500	20000	0
SUBJECT #	29	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5-Y	M-5	----------
		20000	2550	0
SUBJECT #	30	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-1	----------
		20000	20000	0
SUBJECT #	31	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-2	----------
		20000	1170	0
SUBJECT #	32	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-14	M-8	----------
		136	20000	0

SUBJECT #	33	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-18	M-8	----------
		20000	20000	0
SUBJECT #	34	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-8	M-25 QAF	----------
		20000	134	0
SUBJECT #	35	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-4	M-8	----------
		18100	856	0
SUBJECT #	36	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-19	M-16 QAF	----------
		20000	160	0
SUBJECT #	37	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-4	TM M-25	----------
		5560	20000	0
SUBJECT #	38	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-8	M-16 QAF	----------
		20000	1400	0
SUBJECT #	39	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1-CR
		0	2560	17700
SUBJECT #	40	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-18	TM M-3	----------
		293	20000	0

SUBJECT #	41	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-19	M-6	----------
		378	20000	0
SUBJECT #	42	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	M-16 CAF	L-1-CR
		0	319	2970
SUBJECT #	43	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-14	TM M-2	----------
		397	20000	0
SUBJECT #	44	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-2
		0	20000	20000
SUBJECT #	45	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-19	TM M-8	----------
		3780	505	0
SUBJECT #	46	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-2	----------
		20000	20000	0
SUBJECT #	47	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-5	----------
		1120	159	0
SUBJECT #	48	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5-Y	TM M-6	- --------
		13400	143	0

SUBJECT #	49	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-1	M-5	----------
		100	13200	0
SUBJECT #	50	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-14	TM M-5	----------
		18800	20000	0
SUBJECT #	51	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-18	M-3	----------
		20000	19600	0
SUBJECT #	52	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	----------	----------
		0	0	0
SUBJECT #	53	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-18	TM M-3	----------
		443	16600	0
SUBJECT #	54	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-2	M-1	----------
		5440	100	0
SUBJECT #	55	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-8	M-8	----------
		100	2590	0
SUBJECT #	56	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-14	M-6	----------
		20000	449	0

SUBJECT #	57	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-1	----------
		20000	2050	0
SUBJECT #	58	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-0	----------
		613	1800	0
SUBJECT #	59	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-1-BE
		0	20000	19900
SUBJECT #	60	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-7 QAF	M-8	----------
		100	3880	0
SUBJECT #	61	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1
		0	20000	20000
SUBJECT #	62	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-18	M-1	----------
		1240	20000	0
SUBJECT #	63	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-6	----------
		20000	5880	0
SUBJECT #	64	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-0	----------
		20000	2610	0

SUBJECT #	65	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-14	M-2	----------
		232	1530	0
SUBJECT #	66	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-14	TM M-8	----------
		20000	18500	0
SUBJECT #	67	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-1-BE
		0	709	20000
SUBJECT #	68	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3	L-1
		0	430	20000
SUBJECT #	69	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-18	M-6	----------
		322	20000	0
SUBJECT #	70	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-18	TM M-1	----------
		16300	3130	0
SUBJECT #	71	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-8	M-8	----------
		14600	11900	0
SUBJECT #	72	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-8	TM M-2	----------
		20000	20000	0

SUBJECT #	73	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-14	M-2	----------
		573	394	0
SUBJECT #	74	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-5	----------
		20000	13700	0
SUBJECT #	75	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-2	M-8	----------
		14500	7620	0
SUBJECT #	76	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-7	TM M-1	----------
		2500	415	0
SUBJECT #	77	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-6	----------
		17700	8630	0
SUBJECT #	78	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3	L-1
		0	1890	1420
SUBJECT #	79	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-4	TM M-3	----------
		20000	20000	0
SUBJECT #	80	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-14	TM M-6	----------
		262	20000	0

SUBJECT #	81	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	TM M-0	L-1
		0	20000	20000
SUBJECT #	82	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-2	TM M-5	----------
		20000	20000	0
SUBJECT #	83	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-1	M-4	----------
		20000	100	0
SUBJECT #	84	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-4	M-2	----------
		20000	861	0
SUBJECT #	85	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-19	TM M-1	----------
		20000	20000	0
SUBJECT #	86	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-1	TM M-2	----------
		4760	20000	0
SUBJECT #	87	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-19	TM M-6	----------
		18300	2120	0
SUBJECT #	88	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	TM M-5	L-1-BE
		0	1350	6570

SUBJECT #	89	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	M-8	TM L-3
		0	20000	20000
SUBJECT #	90	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-4	TM M-8	----------
		6280	521	0
SUBJECT #	91	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-4	M-1	----------
		20000	17900	0
SUBJECT #	92	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-2	TM M-2	----------
		20000	10700	0
SUBJECT #	93	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	M-5	TM L-1-BE
		0	100	2550
SUBJECT #	94	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-19	M-3	----------
		17300	814	0
SUBJECT #	95	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		S-14	TM M-6	----------
		20000	3490	0
SUBJECT #	96	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		TM S-2	M-6	----------
		20000	199	0

SUBJECT #	97	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-2	----------
		100	100	0
SUBJECT #	98	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-4	M-3	----------
		4200	370	0
SUBJECT #	99	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM L-2	L-2
		0	5120	100
SUBJECT #	100	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM M-2-SE	M-8	----------
		10100	506	0
SUBJECT #	101	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM L-1-SI	M-1	----------
		709	20000	0
SUBJECT #	102	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM M-7	M-5	----------
		10400	102	0
SUBJECT #	103	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-3	L-3
		0	2860	20000
SUBJECT #	104	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-6	L-2
		0	1470	20000

SUBJECT #	105	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-2	TM M-5	----------
		20000	13700	0
SUBJECT #	106	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-14	TM M-2	----------
		11800	537	0
SUBJECT #	107	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-1	M-6	----------
		20000	6800	0
SUBJECT #	108	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		TM S-5	M-8	----------
		20000	12500	0
SUBJECT #	109	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-5	L-3
		0	7796	1200
SUBJECT #	110	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-1	TM M-1	----------
		20000	5000	0
SUBJECT #	111	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		----------	TM M-8	L-1
		0	15000	20000
SUBJECT #	112	ILC-XM40	ILC-XM40	ILC-XM40
		SMALL	MEDIUM	LARGE
Mask ID #		S-5	TM M-6	----------
		14300	1006	0

SUBJECT #	113	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	M-3	TM L-1-B3
		0	20000	3440
SUBJECT #	114	ILC-XM40 SMALL	ILC-XM40 MEDIUM	ILC-XM40 LARGE
Mask ID #		----------	TM M-2	L-2
		0	285	573

ILC-XM40 SIZE DETERMINATION

	Subject #	Pf	Photo	Best Fit	Comments
+	1	M	M-S	M	S PF LOW
+	2	S-M	S-M	M	
+	3	S-M	M	M	
+	4	S-M	M	M	
	5	---------- QAF ----------			
+	6	M	M	M	L PF LOW
+	7	M	M	M	S PF LOW
+	8	M-L	M-L	L	
+	9	S	M	S	PF LOW ON BOTH
+	10	S	S	S	M PF LOW
+	11	S	S-M	S	M PF SLIGHTLY LOW
+	12	M-L	*	M-L	* PHOTO OF E F MISSING
	13	---------- QAF ----------			
	14	---------- QAF ----------			
+	15	S	S-M	S	M PF LOW
+	16	S-M	M	M	
+	17	M	S-M	M	S PF LOW
+	18	L	M-L	L	M PF LOW
+	19	S	S-M	S	M PF LOW
+	20	M	M-L	M	L PF LOW
+	21	L	L	L	M PF LOW
+	22	S-M	S-M	S	
	23	---------- QAF ----------			

	Subject #	Pf	Photo	Best Fit	Comments
+	24	S-M	S-M	S	
+	25 (70)	M	S-M	M	PF LOW ON BOTH
+	26	M	M	M	S PF LOW
+	27 (61)	M	M	M	L PF LOW
+	28 (72)	S-M	S-M	M	
+	29 (65)	S	S	S	M PF LOW
+	30 (63)	S-M	S	S	M NOSE CUP IN EYES
+	31	S	S-M	S	M PF LOW
+	32	M	S-M	M	S PF LOW
+	33 (62)	S-M	S-M	S	
	34	---------- OAF ----------			
+	35	S	S	S	M PF LOW
	36 (100)	---------- OAF ----------			
+	37 (66)	M	M	M	S PF LOW
	38	---------- OAF ----------			
+	39 (68)	L	M-L	L	M PF LOW
+	40	M	M	M	S PF LOW
+	41 (64)	M	S-M	M	S PF LOW
	42 (59)	---------- OAF ----------			
+	43	M	M	M	S PF LOW
+	44 (47)	M-L	M-L	L	
+	45	S	S-M	S	M PF LOW
+	46 (69)	S-M	S	S	
+	47	S	S-M	S	PF LOW ON BOTH
+	48	S	S-M	S	M PF LOW
+	49	M	S-M	M	S PF LOW

	Subject #	Pf	Photo	Best Fit	Comments
+	50	S-M	M	M	
+	51	S-M	S-M	S	
	52	---------- QAF ----------			
+	53	M	M	M	S PF LOW
+	54 (35)	S	S	S	M PF LOW
+	55	M	M	M	PF LOW ON BOTH
+	56 (34)	S	S	S	M PF LOW
+	57	S	S-M	S	M PF SLIGHTLY LOW
+	58	M	M	M	PF LOW ON BOTH
+	59 (42)	M-L	M-L	M-L	EITHER MASK SIZE OK
+	60	---------- QAF ----------			
	61 (27)	M-L	M-L	M-L	EITHER MASK SIZE OK
	62 (33)	M	S-M	M	S PF LOW
	63 (30)	S-M	S	S	M PF SLIGHTLY LOW
	64 (41)	S	S-M	S	M PF SLIGHTLY LOW
	65 (29)	M	S-M	M	PF LOW ON BOTH
	66 (37)	S-M	S-M	M	
	67 (44)	L	M-L	L	M PF LOW
	68 (39)	L	M-L	L	M PF LOW
	69 (46)	M	S-M	M	S PF LOW
	70 (25)	S	S-M	S	M PF SLIGHTLY LOW
+	71	S-M	S-M	M	
	72 (28)	S-M	S-M	M	
+	73	S-M	S	S	PF LOW ON BOTH
+	74	S-M	M	M	
+	75	S-M	S	S	M NOSE CUP IN EYES

Subject #	Pf	Photo	Best Fit	Comments
+ 76	S	S	S	PF LOW ON BOTH
+ 77	S-M	S-M	S-M	
+ 78	M-L	M-L	M	PF LOW ON BOTH
+ 79	S-M	S-M	S-M	
+ 80	M	M	M	S PF LOW
+ 81	M-L	M-L	M-L	
+ 82	S-M	M	M	
+ 83	S	S-M	S	M PF LOW
84 (56)	S	S-M	S	M PF LOW
+ 85	S-M	S-M	S-M	
+ 86	M	M	M	S PF SLIGHTLY LOW
+ 87 (102)	S	M-S	S	M PF LOW
+ 88	L	M-L	L	M PF LOW
+ 89	M-L	M-L	M	
+ 90	S	M	S	M PF LOW
+ 91	S-M	S-M	S	
+ 92	S-M	S-M	M	
+ 93	L	M-L	L	M PF LOW
+ 94	S	S-M	S	M PF LOW
+ 95	S	S-M	S	M PF LOW
96 (54)	S	S	S	M PF LOW NOSE CUP IN EYES
+ 97	-	S-M	?	BOTH MASK HAD POOR PF's
+ 98	S	S	S	M PF POOR NOSE CUP IN EYES
+ 99	M	M-L	M	L PF LOW
+ 100 (36)	S	S	S	M PF LOW
+ 101	M	S-M	M	S PF LOW

Subject #	Pf	Photo	Best Fit	Comments
102 (87)	S	S	S	M PF LOW
+ 103	L	M-L	L	M PF SLIGHTLY LOW
+ 104	L	M-L	L	M PF SLIGHTLY LOW
+ 105	S-M	S-M	M	
+ 106	S	S-M	S	M PF LOW
+ 107	S-M	S	S	
+ 108	S-M	S-M	S	
+ 109	M	M-L	M	L PF LOW
+ 110	S-M	S-M	S	M PF SLIGHTLY LOW
+ 111	M-L	M-L	M-L	
+ 112	S	M	S	
+ 113	M	M-L	M	L PF SLIGHTLY LOW
+ 114	-	M-L	M	BOTH PF ARE LOW

APPENDIX G4

Anthropometric Data by Subject

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LAMANNA ALFRADO Subject No.: 1

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 174.8 cm 2 . Weight: 170 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	130
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.3
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.9
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	11.4
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	11.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: REYNALDO TILETILE Subject No.: 2

S/N: ---------- Sex: M Race: ASIAN (FILIPINO Age: 28

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	J	-----	-----

1 . Height: 166.1 cm 2 . Weight: 140 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	143
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.4
8 .	Bitragion Pogonion Arc - Tape Only	32.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.4
10 .	Bitragion Pogonion Arc - Tape Holder	30.8
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	12.6
13 .	Menton-Sellion Diameter - Sliding Caliper	11.3
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton Sellion Diameter - Metric Gauge	11.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PARRIN KUIPERS Subject No.: 3

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 182 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	155
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.9
7 .	Bitragion Minimum Frontal Arc - Tape Only	31
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33.8
0 .	Bitragion Pogonion Arc - Tape Holder	29
1 .	Bizygomatic Diameter - Spreading Caliper	14.3
2 .	Biprozygomatic Diameter - Spreading Caliper	13.2
3 .	Menton-Sellion Diameter - Sliding Caliper	12.2
4 .	Bizygomatic Diameter - Metric Gauge	14.3
5 .	Biprozygomatic Diameter - Metric Gauge	13.2
6 .	Menton Sellion Diameter - Metric Gauge	13

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ERIC WHEATLEY Subject No.: 4

S/N: ---------- Sex: M Race: BLACK Age: --

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 176.4 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.7
8 .	Bitragion Pogonion Arc - Tape Only	31.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.3
10 .	Bitragion Pogonion Arc - Tape Holder	30.1
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	13.6
15 .	Biprozygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	12.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: CHARLES PROUTY Subject No.: 5

S/N: ---------- Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	----	----
SCOTT	S	M	----	----
AVON US10	S	M	----	----

1 . Height: 178.7 cm 2 . Weight: 164 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	144
4 .	Submandibular Skinfold	3.5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.8
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.6
10 .	Bitragion Pogonion Arc - Tape Holder	29.6
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	12.1
13 .	Menton-Sellion Diameter - Sliding Caliper	11.2
14 .	Bizygomatic Diameter - Metric Gauge	13.6
15 .	Biprozygomatic Diameter - Metric Gauge	12.5
16 .	Menton Sellion Diameter - Metric Gauge	11.7

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DEREL SCALES Subject No.: 6

S/N: ———— Sex: M Race: BLACK Age: 24

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	———	———
SCOTT	M	L	———	———
AVON US10	M	L	———	———

1 . Height: 187.4 cm 2 . Weight: 178 lbs

3 . Face Size - Adjustable Metric Template Circumference ..... SA 180

4 . Submandibular Skinfold 3

5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool 19

6 . Biprozygomatic Menton Arc - Tape and Marker Tool 28.7

7 . Bitragion Minimum Frontal Arc - Tape Only 29.2

8 . Bitragion Pogonion Arc - Tape Only 32.2

9 . Bitragion Minimum Frontal Arc - Tape Holder 32

10 . Bitragion Pogonion Arc - Tape Holder 32.4

11 . Bizygomatic Diameter - Spreading Caliper 14.7

12 . Biprozygomatic Diameter - Spreading Caliper 13.5

13 . Menton-Sellion Diameter - Sliding Caliper 13.3

14 . Bizygomatic Diameter - Metric Gauge 14.8

15 . Biprozygomatic Diameter - Metric Gauge 14

16 . Menton Sellion Diameter - Metric Gauge 13.1

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JOHN WATTS Subject No.: 7

S/N: ---------- Sex: M Race: WHITE Age: --

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 173.5 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	150
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	16.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.7
8 .	Bitragion Pogonion Arc - Tape Only	32.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	12.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	12.5

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RODNEY SOLOMON Subject No.: 8

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	L	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 185.4 cm 2 . Weight: 213 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	148
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	32.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.4
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Biprozygomatic Diameter - Spreading Caliper	13
13 .	Menton-Sellion Diameter - Sliding Caliper	12.7
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: KEVIN WALKER Subject No.: 9

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 175.3 cm 2 . Weight: 172 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	160
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	32.6
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.8
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	14.5
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RAPHAEL MCNEIL Subject No.: 10

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 154.6 cm 2 . Weight: 158 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	145
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	15
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	29.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.8
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	11.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	13.7
15 .	Biprozygomatic Diameter - Metric Gauge	12.9
16 .	Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JEFFERY JOHNSON Subject No.: 11

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	----	----
SCOTT	M	S	----	----
AVON US10	M	S	----	----

1 . Height: 167.4 cm 2 . Weight: 154 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	119
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	23.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.2
8 .	Bitragion Pogonion Arc - Tape Only	31.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.7
10 .	Bitragion Pogonion Arc - Tape Holder	30
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.6
13 .	Menton-Sellion Diameter - Sliding Caliper	11.2
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	12.9
16 .	Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LLOYD BELLARD Subject No.: 12

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	L	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 192.3 cm 2 . Weight: 183 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	177
4 .	Subasndibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.3
6 .	Bizygomatic Menton Arc - Tape and Marker Tool	27
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	34.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33.2
10 .	Bitragion Pogonion Arc - Tape Holder	32.7
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	14.7
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	13

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RODNEY L. OWINGS Subject No.: 13

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Alternate Size	PF Values: Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 169.5 cm 2 . Weight: 144 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	162
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.8
8 .	Bitragion Pogonion Arc - Tape Only	33.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.7
10 .	Bitragion Pogonion Arc - Tape Holder	32.8
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	13.3
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CSDC
SIZE DETERMINATION XM40 MASK

A . Name: JERRY JOHNSON Subject No.: 14

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 172.7 cm 2 . Weight: 150 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	136
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	31.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.3
10 .	Bitragion Pogonion Arc - Tape Holder	30.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.6
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case)

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ROBERT LINDEMOEN Subject No.: 15

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 181.4 cm 2 . Weight: 206 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	148
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.8
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.7
8 .	Bitragion Pogonion Arc - Tape Only	34
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31
10 .	Bitragion Pogonion Arc - Tape Holder	32.9
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	15.6
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION YM40 MASK

A . Name: JAMES D. HOFT Subject No.: 15

S/N: ———— Sex: M Race: WHITE Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	———	———
SCOTT	M	L	———	———
AVON US10	M	L	———	———

1 . Height: 182.1 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	168
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.2
10 .	Bitragion Pogonion Arc - Tape Holder	31.2
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14.7
15 .	Biprozygomatic Diameter - Metric Gauge	13.9
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A. Name: JAMES HILGEDICK Subject No.: 17

S/N: ———— Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	———	———
SCOTT	M	S	———	———
AVON US10	M	S	———	———

1. Height: 174.6 cm 2. Weight: 181 lbs

		cm
3.	Face Size – Adjustable Metric Template Circumference	147
4.	Submandibular Skinfold	9
5.	Bitemporal Fossa – Minimum Frontal Arc – Tape and Marker Tool	19.1
6.	Biprozygomatic Menton Arc – Tape and Marker Tool	25.7
7.	Bitragion Minimum Frontal Arc – Tape Only	30.7
8.	Bitragion Pogonion Arc – Tape Only	32.5
9.	Bitragion Minimum Frontal Arc – Tape Holder	32.5
10.	Bitragion Pogonion Arc – Tape Holder	31.4
11.	Bizygomatic Diameter – Spreading Caliper	14
12.	Biprozygomatic Diameter – Spreading Caliper	12.5
13.	Menton-Sellion Diameter – Sliding Caliper	12.2
14.	Bizygomatic Diameter – Metric Gauge	14.3
15.	Biprozygomatic Diameter – Metric Gauge	12.8
16.	Menton Sellion Diameter – Metric Gauge	12.5

17. Observation of Anomalies.

18. Comfort 0 – 5 (0 being worst case) –

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ANTHONY WOLFE Subject No.: 18

S/N: ———— Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	——	——
SCOTT	M	S	——	——
AVON US10	- M	L	——	——

1 . Height: 183.2 cm 2 . Weight: 149 lbs

		CD
3 .	Face Size - Adjustable Metric Template Circumference	144
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	27.8
8 .	Bitragion Pogonion Arc - Tape Only	31.7
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.1
10 .	Bitragion Pogonion Arc - Tape Holder	30.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	13.5
15 .	Biprozygomatic Diameter - Metric Gauge	12.2
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:
VERY LONG NARROW FACE
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18 . Confort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: WILLIAM PENNEY Subject No.: 19

S/N: ---------- Sex: M Race: WHITE Age: 22

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 173.2 cm 2 . Weight: 183 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	144
4 .	Submandibular Skinfold	8
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.8
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.9
10 .	Bitragion Pogonion Arc - Tape Holder	31.9
11 .	Bizygomatic Diameter - Spreading Caliper	14.7
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	15
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton-Sellion Diameter - Metric Gauge	12.6

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JUAN CRUZ Subject No.: 20

S/N: ---------- Sex: M Race: SPANISH Age: 21

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	L	M	-----	-----
SCOTT	L	M	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 182.7 cm 2 . Weight: 215 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	164
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.8
8 .	Bitragion Pogonion Arc - Tape Only	35
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.9
10 .	Bitragion Pogonion Arc - Tape Holder	33.2
11 .	Bizygomatic Diameter - Spreading Caliper	15
12 .	Biprozygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	16
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION X540 MASK

A . Name: GARY TILMAN Subject No.: 21

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category		FF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
JLC	L	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 181.4 cm 2 . Weight: 195 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	161
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	28
7 .	Bitragion Minimum Frontal Arc - Tape Only	31.1
8 .	Bitragion Pogonion Arc - Tape Only	34.6
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.7
10 .	Bitragion Pogonion Arc - Tape Holder	33.4
11 .	Bizygomatic Diameter - Spreading Caliper	13.9
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.9
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JAMES VOLER Subject No.: 22

S/N: ---------- Sex: M Race: WHITE Age: --

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 176.2 cm 2 . Weight: 198 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	137
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.8
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.5
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.3
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	12.6
13 .	Menton-Sellion Diameter - Sliding Caliper	11.7
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	12.1

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RICHARD CAMPBELL Subject No.: 23

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 178.5 cm 2 . Weight: 192 lbs

		CS
3 .	Face Size - Adjustable Metric Template Circumference	143
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	32.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.2
10 .	Bitragion Pogonion Arc - Tape Holder	31.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	11.6
14 .	Bizygomatic Diameter - Metric Gauge	14.9
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	11.9

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: TIMOTHY CONNOLLY Subject No.: 24

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 177.8 cm 2 . Weight: 163 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	132
4 . Submandibular Skinfold	4
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.9
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 . Bitragion Minimum Frontal Arc - Tape Only	28.7
8 . Bitragion Pogonion Arc - Tape Only	32
9 . Bitragion Minimum Frontal Arc - Tape Holder	31.4
10 . Bitragion Pogonion Arc - Tape Holder	31.5
11 . Bizygomatic Diameter - Spreading Caliper	14.1
12 . Biprozygomatic Diameter - Spreading Caliper	12.9
13 . Menton-Sellion Diameter - Sliding Caliper	11.7
14 . Bizygomatic Diameter - Metric Gauge	14.4
15 . Biprozygomatic Diameter - Metric Gauge	13.2
16 . Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM4C MASK

A - Name: BRUCE MACKEY Subject No.: 28

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 182.9 cm 2 . Weight: 188 lbs

		CM
3 .	Face Size - Adjustable Metric Template Circumference	140
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	35.7
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	15.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	15.6
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION (M40 MASK

A . Name: EVERETT LINE Subject No.: 2

S/N: ———— Sex: M Race: BLACK Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	FF Values: Expert Fit	FF Values: Alternate Size
ILC	M	S	———	———
SCOTT	M	S	———	———
AVON US10	M	S	———	———

1 . Height: 175.3 cm 2 . Weight: 142 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	148
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	31.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.7
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	14.6
15 .	Biprozygomatic Diameter - Metric Gauge	14.2
16 .	Menton Sellion Diameter - Metric Gauge	13.1

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XMAS MASK

A . Name: THOMAS CRANFORD Subject No.: 27

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Alternate Size	PF Values: Expert Fit	Alternate Size
SLC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 170.2 cm 2 . Weight: 170 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	135
4 . Submandibular Skinfold	5
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	26.3
7 . Bitragion Minimum Frontal Arc - Tape Only	29.5
8 . Bitragion Pogonion Arc - Tape Only	32.8
9 . Bitragion Minimum Frontal Arc - Tape Holder	32
10 . Bitragion Pogonion Arc - Tape Holder	32.4
11 . Bizygomatic Diameter - Spreading Caliper	13.7
12 . Biprozygomatic Diameter - Spreading Caliper	12.7
13 . Menton-Sellion Diameter - Sliding Caliper	12.7
14 . Bizygomatic Diameter - Metric Gauge	14.1
15 . Biprozygomatic Diameter - Metric Gauge	13.2
16 . Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MICHAEL FORD Subject No.: 28

S/N: ---------- Sex: M Race: BLACK Age: 20

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	X	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 160 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	158
4 . Submandibular Skinfold	6
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.3
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 . Bitragion Minimum Frontal Arc - Tape Only	29.4
8 . Bitragion Pogonion Arc - Tape Only	32.5
9 . Bitragion Minimum Frontal Arc - Tape Holder	32
10 . Bitragion Pogonion Arc - Tape Holder	31.5
11 . Bizygomatic Diameter - Spreading Caliper	14
12 . Biprozygomatic Diameter - Spreading Caliper	13.1
13 . Menton-Sellion Diameter - Sliding Caliper	12.8
14 . Bizygomatic Diameter - Metric Gauge	14.4
15 . Biprozygomatic Diameter - Metric Gauge	13.5
16 Menton Sellion Diameter - Metric Gauge	12.3

17 . Observations of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MARTIN SIMONS Subject No.: 29

S/M: ---------- Sex: M Race: WHITE Age: 19

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 182.9 cm 2 . Weight: 150 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	137
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - minimum Frontal Arc - Tape and Marker Tool	18.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	31.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.6
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.8
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	13.8
16 .	Menton Sellion Diameter - Metric Gauge	12.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DENNIS PRIEST Subject No.: 30

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 190 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	158
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.8
8 .	Bitragion Pogonion Arc - Tape Only	32.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.1
10 .	Bitragion Pogonion Arc - Tape Holder	31.2
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	13
14 .	Bizygomatic Diameter - Metric Gauge	15.3
15 .	Biprozygomatic Diameter - Metric Gauge	14.1
16 .	Menton Sellion Diameter - Metric Gauge	13.5

17 . Observation of Anomalies:

_____
_____
_____
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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: EDWARD ZALESKI Subject No.: 31

S/N: ---------- Sex: M Race: WHITE Age: 20

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	R	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 175.3 cm 2 . Weight: 168 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	152
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.7
8 .	Bitragion Pogonion Arc - Tape Only	30.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.3
10 .	Bitragion Pogonion Arc - Tape Holder	30.2
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	12.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.3
16 .	Menton Sellion Diameter - Metric Gauge	12.5

17 . Observation of Anomalies:

18 . Comfort C - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: FRED OLSON Subject No.: 32

S/N: ---------- Sex: M Race: WHITE Age: 25

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 172.7 cm 2 . Weight: 170 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	140
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.3
8 .	Bitragion Pogonion Arc - Tape Only	31.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.5
12 .	Biprozygomatic Diameter - Spreading Caliper	12.2
13 .	Menton-Sellion Diameter - Sliding Caliper	11.4
14 .	Bizygomatic Diameter - Metric Gauge	13.8
15 .	Biprozygomatic Diameter - Metric Gauge	12.9
16 .	Menton Sellion Diameter - Metric Gauge	12

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION /M40 MASK

A . Name: RICKY RAYBURN Subject No.: 33

S/N: ---------- Sex: M Race: WHITE Age: 29

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 182.9 cm 2 . Weight: 200 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	141
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.8
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.3
8 .	Bitragion Pogonion Arc - Tape Only	31.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.4
10 .	Bitragion Pogonion Arc - Tape Holder	29.2
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	12.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	12.8
16 .	Menton Sellion Diameter - Metric Gauge	12.6

17 Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LISA WATTS Subject No.: 34

S/N: ---------- Sex: F Race: WHITE Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 157.5 cm 2 . Weight: 135 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	132
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	16.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.5
8 .	Bitragion Pogonion Arc - Tape Only	29.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.2
10 .	Bitragion Pogonion Arc - Tape Holder	26.2
11 .	Bizygomatic Diameter - Spreading Caliper	12.9
12 .	Biprozygomatic Diameter - Spreading Caliper	11.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	13.8
15 .	Biprozygomatic Diameter - Metric Gauge	12.7
16 .	Menton Sellion Diameter - Metric Gauge	12

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTINS AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JERRY LAENIER Subject No.: 35

S/N: ---------- Sex: M Race: WHITE Age: 21

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 180.3 cm 2 . Weight: 135 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	146
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	27.9
8 .	Bitragion Pogonion Arc - Tape Only	32.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30
10 .	Bitragion Pogonion Arc - Tape Holder	31.0
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	13
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LINDA WARREN Subject No.: 36

S/N: ---------- Sex: F Race: WHITE Age: 34

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 157.5 cm 2 . Weight: 118 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	126
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	23.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	29
8 .	Bitragion Pogonion Arc - Tape Only	28.5
9	Bitragion Minimum Frontal Arc - Tape Holder	30.2
10 .	Bitragion Pogonion Arc - Tape Holder	28.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	12.6
13 .	Menton-Sellion Diameter - Sliding Caliper	11.5
14 .	Bizygomatic Diameter - Metric Gauge	13.8
15 .	Biprozygomatic Diameter - Metric Gauge	13.2
16 .	Menton Sellion Diameter - Metric Gauge	12.1

17 . Observation of Anomalies:

18 . Comfort (0 - 5 ... being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: GEORGE MURRAY Subject No.: 37

S/N: ---------- Sex: M Race: BLACK Age: 21

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 188 cm 2 . Weight: 165 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	167
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.3
8 .	Bitragion Pogonion Arc - Tape Only	31.6
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	30.9
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.8
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.2
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

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DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: CHRISTOPHER WALZEL Subject No.: 38

S/N: ---------- Sex: M Race: WHITE Age: 22

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 177.8 cm 2 . Weight: 185 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	158
4 .	Submandibular Skinfold	6.5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.2
8 .	Bitragion Pogonion Arc - Tape Only	31
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	30.3
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14.7
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

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DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ANTHONY SAUNDERS Subject No.: 39

S/N: ---------- Sex: M Race: BLACK Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	L	M	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 185.4 cm 2 . Weight: 179 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	208
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	29.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	32.5
8 .	Bitragion Pogonion Arc - Tape Only	35
9 .	Bitragion Minimum Frontal Arc - Tape Holder	34.5
10 .	Bitragion Pogonion Arc - Tape Holder	34.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	14.7
14 .	Bizygomatic Diameter - Metric Gauge	14.8
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	14.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

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DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DANNY JOHNSON Subject No.: 40

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 179.1 cm 2 . Weight: 163 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	129
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.8
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	30.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	11.8
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.9
16 .	Menton Sellion Diameter - Metric Gauge	11.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

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DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PAT JOHNSON Subject No.: 41

S/N: - ---------- Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 175.3 cm 2 . Weight: 150 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	134
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	29
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.8
10 .	Bitragion Pogonion Arc - Tape Holder	31.1
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	12.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DARRYL DIXON Subject No.: 42

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON USIO	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 179 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	168
4 .	Submandibular Skinfold	9
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	34.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	33.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	12.6
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.1
16 .	Menton Sellion Diameter - Metric Gauge	12.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JERRY GRAYSON Subject No.: 43

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 188 cm 2 . Weight: 173 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	161
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.1
8 .	Bitragion Pogonion Arc - Tape Only	32.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.6
10 .	Bitragion Pogonion Arc - Tape Holder	31.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RONALD EPPS Subject No.: 44

S/N: ---------- Sex: M Race: BLACK Age: 22

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 185.4 cm 2 . Weight: 210 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	205
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	30.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	35.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	35
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	14.7
14 .	Bizygomatic Diameter - Metric Gauge	15.7
15 .	Biprozygomatic Diameter - Metric Gauge	14.8
16 .	Menton Sellion Diameter - Metric Gauge	15.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LISA WHALEY Subject No.: 45

S/N: ---------- Sex: F Race: WHITE Age: 25

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON EA10	M	S	-----	-----

1 . Height: 162.6 cm 2 . Weight: 140 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	128
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	12.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.2
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	30.4
11 .	Bizygomatic Diameter - Spreading Caliper	13.9
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	11.9
14 .	Bizygomatic Diameter - Metric Gauge	13.3
15 .	Biprozygomatic Diameter - Metric Gauge	12.9
16 .	Menton Sellion Diameter - Metric Gauge	12

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case): .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MICHAEL WRIGHT Subject No.: 46

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 185.4 cm 2 . Weight: 163 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	145
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.4
8 .	Bitragion Pogonion Arc - Tape Only	32.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: CHAUNCEY BROOKS Subject No.: 47

S/N: ---------- Sex: M Race: BLACK Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 182.9 cm 2 . Weight: 150 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	152
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.4
13 .	Menton-Sellion Diameter - Sliding Caliper	13.2
14 .	Bizygomatic Diameter - Metric Gauge	13.5
15 .	Biprozygomatic Diameter - Metric Gauge	12.8
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DONALD S. COOK Subject No.: 48

S/N: ---------- Sex: M Race: WHITE Age: 25

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 172.7 cm 2 . Weight: 166 lbs

		S2
3 .	Face Size - Adjustable Metric Template Circumference	127
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.2
8 .	Bitragion Pogonion Arc - Tape Only	30.8
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	30.1
11 .	Bizygomatic Diameter - Spreading Caliper	14.?
12 .	Biprozygomatic Diameter - Spreading Caliper	17
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.?
15 .	Biprozygomatic Diameter - Metric Gauge	17.?
16 .	Menton Sellion Diameter - Metric Gauge	12.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ROBERT WEINSTEIN Subject No.: 49

S/N: ———— Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Alternate Size	PF Values: Expert Fit	Alternate Size
ILC	S	M	———	———
SCOTT	M	S	———	———
AVON US10	M	S	———	———

1 . Height: 171.5 cm 2 . Weight: 146 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	142
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.7
8 .	Bitragion Pogonion Arc - Tape Only	30.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.6
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.5
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	13
14 .	Bizygomatic Diameter - Metric Gauge	14.2
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	13

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MORGAN MEAD Subject No.: 50

S/N: ——————— Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	———	———
SCOTT	M	L	———	———
AVON US10	M	L	———	———

1 . Height: 180.3 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	165
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	31.1
8 .	Bitragion Pogonion Arc - Tape Only	35
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33
10 .	Bitragion Pogonion Arc - Tape Holder	32.5
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	13.6
14 .	Bizygomatic Diameter - Metric Gauge	14.2
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	13.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ERNEST HUTSON Subject No.: 51

S/N: ---------- Sex: M Race: WHITE Age: 25

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 177.8 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	160
4 .	Submandibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	31.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	14.9
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	12.6

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ROBERT AYSCUE Subject No.: 53

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Subaandibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	31.2
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33.2
10 .	Bitragion Pogonion Arc - Tape Holder	32.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.5
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	11.7
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	12

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LEVELLE PAPILLION Subject No.: 54

S/N: ---------- Sex: M Race: BLACK Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 177.8 cm 2 . Weight: 145 lbs

		CM
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Submandibular Skinfold	2.5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	27
8 .	Bitragion Pogonion Arc - Tape Only	30
9 .	Bitragion Minimum Frontal Arc - Tape Holder	29.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.5
11 .	Bizygomatic Diameter - Spreading Caliper	12.2
12 .	Biprozygomatic Diameter - Spreading Caliper	11.7
13 .	Menton-Sellion Diameter - Sliding Caliper	13.3
14 .	Bizygomatic Diameter - Metric Gauge	13.2
15 .	Biprozygomatic Diameter - Metric Gauge	12.2
16 .	Menton Sellion Diameter - Metric Gauge	13.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RONALD ROLLO Subject No.: 55

S/N: ---------- Sex: M Race: WHITE Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 169 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	155
4 .	Submandibular Skinfold	10
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.4
8 .	Bitragion Pogonion Arc - Tape Only	32.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10	Bitragion Pogonion Arc - Tape Holder	31.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	11.3
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.5
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

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18 . Comfort 0 - 9 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DWIGHT BLACK Subject No.: 56

S/N: ---------- Sex: M Race: BLACK Age: 21

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 177.8 cm 2 . Weight: 146 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	126
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Mentor Arc - Tape and Marker Tool	25.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	27.7
8 .	Bitragion Pogonion Arc - Tape Only	30.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.1
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	12.9
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: THOMAS GRIM Subject No.: 57

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 180.3 cm 2 . Weight: 154 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	149
4 .	Submandibular Skinfold	4.5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.4
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.6
8 .	Bitragion Pogonion Arc - Tape Only	31.7
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.5
12 .	Biprozygomatic Diameter - Spreading Caliper	15.4
13 .	Menton-Sellion Diameter - Sliding Caliper	11.8
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	17.3
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (5 being worst case) ....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PETER SASSER Subject No.: 58

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 170.2 cm 2 . Weight: 171 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	163
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.1
8 .	Bitragion Pogonion Arc - Tape Only	32.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	33
11	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	13.2
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	15.2
16 .	Menton Sellion Diameter - Metric Gauge	13.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: **DARRLY DIXON (REPEAT)** Subject No.: 59

S/N: ~~~~~~~~~~ Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON U810	M	S	-----	-----

1 . Height: 172.7 cm. 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	25
4 .	Submandibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biorozygomatic Menton Arc - Tape and Marker Tool	28.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.3
8 .	Bitragion Pogonion Arc - Tape Only	33.7
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	33.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14.5
16 .	Menton Sellion Diameter - Metric Gauge	13.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DONALD PALMER Subject No.: 60

S/N: ---------- Sex: M Race: WHITE Age: 21

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US1C	M	S	-----	-----

1 . Height: 172.7 cm 2 . Weight: 127 lbs

		Cm
3 .	Face Size - Adjustable Metric Template Circumference	130
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	28
8 .	Bitragion Pogonion Arc - Tape Only	29
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.2
10 .	Bitragion Pogonion Arc - Tape Holder	29
11 .	Bizygomatic Diameter - Spreading Caliper	13.5
12 .	Biprozygomatic Diameter - Spreading Caliper	12.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	12.9
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: THOMAS CRAWFORD (REPEAT) Subject No.: 61

S/N: ---------- Sex: M Race: WHITE Age: 19

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	———	———
SCOTT	M	L	———	———
AVON US10	M	L	———	———

1 . Height: 172.7 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	170
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.8
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.7
8 .	Bitragion Pogonion Arc - Tape Only	33
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	33
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12.7
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.2
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RICKY RAYBURN (REPEAT) Subject No.: 62

S/N: ---------- Sex: M Race: WHITE Age: 29

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	----
AVON US10	S	M	-----	-----

1 . Height: 182.9 cm 2 . Weight: 195 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	155
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18
6 .	Bizygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	31.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	30.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	12.5
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DENNIS PRIEST (REPEAT) Subject No.: 63

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 190 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	159
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.4
16 .	Menton Sellion Diameter - Metric Gauge	12.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PATRICK JOHNSON (REPEAT) Subject No.: 64

S/N: ———— Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	FF Values: Expert Fit	FF Values: Alternate Size
ILC	S	M	———	———
SCOTT	S	M	———	———
AVON US10	S	M	———	———

1 . Height: 177.8 cm 2 . Weight: 151 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	142
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.7
8 .	Bitragion Pogonion Arc - Tape Only	31.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.6
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	15.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	14.2
15 .	Biprozygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MARTIN SIMONS (REPEAT) Subject No.: 65

S/N: ---------- Sex: M Race: WHITE Age: 18

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	----	----
SCOTT	S	M	----	----
AVON US10	M	S	----	----

1 . Height: 180.3 cm 2 . Weight: 159 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	142
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	32
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	12.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	12.8
16 .	Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (5 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: GEORGE MURRAY (REPEAT) Subject No.: 66

S/N: ---------- Sex: M Race: BLACK Age: 21

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 165.4 cm 2 . Weight: 165 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	163
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.2
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	32.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	14.9
15 .	Biprozygomatic Diameter - Metric Gauge	13.8
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RONALD EPPS (REPEAT) Subject No.: 67

S/N: ---------- Sex: M Race: BLACK Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 180.3 cm 2 . Weight: 206 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	205
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	30
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.5
8 .	Bitragion Pogonion Arc - Tape Only	35.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	35.3
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	15.4
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	15.7
16 .	Menton Sellion Diameter - Metric Gauge	14.4

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (5 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ANTHONY SAUNDERS (REPEAT) Subject No.: 68

S/N: ---------- Sex: M Race: BLACK Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	L	M	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 185.4 cm 2 . Weight: 179 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	204
4 .	Submandibular Skinfold	5
5 .	Biteporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	29.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	32.4
8 .	Bitragion Pogonion Arc - Tape Only	35.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	34.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	17.7
13 .	Menton-Sellion Diameter - Sliding Caliper	14.1
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14.4
16 .	Menton Sellion Diameter - Metric Gauge	14.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MICHAEL WRIGHT (REPEAT) Subject No.: 69

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 192.2 cm 2 . Weight: 168 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	145
4 . Subaandibular Skinfold	4
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.3
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 . Bitragion Minimum Frontal Arc - Tape Only	30.2
8 . Bitragion Pogonion Arc - Tape Only	32
9 . Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 . Bitragion Pogonion Arc - Tape Holder	32
11 . Bizygomatic Diameter - Spreading Caliper	14.5
12 . Biprozygomatic Diameter - Spreading Caliper	13.2
13 . Menton-Sellion Diameter - Sliding Caliper	13
14 . Bizygomatic Diameter - Metric Gauge	14.9
15 . Biprozygomatic Diameter - Metric Gauge	13.6
16 . Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: BRUCE MACKEY (REPEAT) Subject No.: 70

S/N: ---------- Sex: M Race: BLACK Age: 18

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	----	----
SCOTT	M	S	----	----
AVON US10	M	S	----	----

1 . Height: 182.9 cm 2 . Weight: 187 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	155
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	32.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RODNEY POPPLEWELL Subject No.: 71

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 177.8 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	165
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MICHAEL FORD (REPEAT) Subject No.: 72

S/N: ---------- Sex: M Race: BLACK Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 172.7 cm 2 . Weight: 164 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	162
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	14.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.6
8 .	Bitragion Pogonion Arc - Tape Only	32.7
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.3
10 .	Bitragion Pogonion Arc - Tape Holder	32.1
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.8
15 .	Biprozygomatic Diameter - Metric Gauge	13.8
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

week of 1/25/8
week of 2/1/80
No Subjects

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ALLEN CASANOVA Subject No.: 73

S/N: Sex: M Race: WHITE Age: 21

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M		
SCOTT	S	M		
AVON US10	S	M		

1 . Height: 67 cm 2 . Weight: 145 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	135
4 .	Submandibular Skinfold	2
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.7
8 .	Bitragion Pogonion Arc - Tape Only	31.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	31.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	11.5
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	11.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: EDWARD STARKEY Subject No.: 74

S/N: ---------- Sex: M Race: BLACK Age: 22

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 68 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	145
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.5
8 .	Bitragion Pogonion Arc - Tape Only	31
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33
10 .	Bitragion Pogonion Arc - Tape Holder	31.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.9
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	13.1
14 .	Bizygomatic Diameter - Metric Gauge	14.3
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Merton Sellion Diameter - Metric Gauge	12.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DWAYNE POTOKA Subject No.: 75

S/N: ---------- Sex: M Race: WHITE Age: 25

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 69 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	155
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.3
8 .	Bitragion Pogonion Arc - Tape Only	32.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.3
10 .	Bitragion Pogonion Arc - Tape Holder	32.4
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	12.7
14 .	Bizygomatic Diameter - Metric Gauge	14.6
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	13

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MATUTE Subject No.: 76

S/N: ---------- Sex: M Race: WHITE/SPANISH Age: 35

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 68 cm 2 . Weight: 140 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	167
4 .	Submandibular Skinfold	4.5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.8
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: MICHAEL WILLIAMS Subject No.: 77

S/N: ---------- Sex: M Race: BLACK Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 72 cm 2 . Weight: 180 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	170
4 . Submandibular Skinfold	4
5 . Sitesporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.5
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	27.6
7 . Bitragion Minimum Frontal Arc - Tape Only	31.6
8 . Bitragion Pogonion Arc - Tape Only	33.4
9 . Bitragion Minimum Frontal Arc - Tape Holder	33.5
10 . Bitragion Pogonion Arc - Tape Holder	33.5
11 . Bizygomatic Diameter - Spreading Caliper	14.2
12 . Biprozygomatic Diameter - Spreading Caliper	13.6
13 . Menton-Sellion Diameter - Sliding Caliper	13.1
14 . Bizygomatic Diameter - Metric Gauge	14.7
15 . Biprozygomatic Diameter - Metric Gauge	14.3
16 . Menton Sellion Diameter - Metric Gauge	13.5

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) .... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: SUEZ ROSARIO Subject No.: 78

S/N: ---------- Sex: M Race: WHITE Age: 29

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 68 cm 2 . Weight: 179 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	178
4 .	Submandibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	21.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.8
7 .	Bitragion Minimum Frontal Arc - Tape Only	32.2
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	35
10 .	Bitragion Pogonion Arc - Tape Holder	33.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.7
12 .	Biprozygomatic Diameter - Spreading Caliper	14.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.4
14 .	Bizygomatic Diameter - Metric Gauge	15.5
15 .	Biprozygomatic Diameter - Metric Gauge	14.2
16 .	Menton Sellion Diameter - Metric Gauge	13.1

17 . Observation of Anomalies:
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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: WILLIAM A. KELLEY Subject No.: 79

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 182.8 cm 2 . Weight: 140 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	157
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.1
8 .	Bitragion Pogonion Arc - Tape Only	33.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.6
10 .	Bitragion Pogonion Arc - Tape Holder	33.2
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.6
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.5
16 .	Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case): -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: KENNETH JACKSON Subject No.: 80

S/N: ---------- Sex: M Race: BLACK Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON GS10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 139 lbs

		CM
3 .	Face Size - Adjustable Metric Faceplate Circumference	157
4 .	Subsandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.1
7 .	Bitragion Minimum Frontal Arc - Tape Only	31.1
8 .	Bitragion Pogonion Arc - Tape Only	32.4
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	32.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	13
13 .	Menton-Sellion Diameter - Sliding Caliper	13.4
14 .	Bizygomatic Diameter Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ANTHONY KELLUM Subject No.: 81

S/N: ---------- Sex: M Race: BLACK Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	L	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 175.3 cm 2 . Weight: 170 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	163
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	28.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	33.8
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.6
10	Bitragion Pogonion Arc - Tape Holder	33.9
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	14
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14	Bizygomatic Diameter - Metric Gauge	15
15 .	Biprozygomatic Diameter - Metric Gauge	14.4
16 .	Menton Sellion Diameter - Metric Gauge	13.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case)

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: KEITH BICKNELL Subject No.: 82

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 190.5 cm 2 . Weight: 200 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	167
4 . Submandibular Skinfold	4
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	27.8
7 . Bitragion Minimum Frontal Arc - Tape Only	29.5
8 . Bitragion Pogonion Arc - Tape Only	33.2
9 . Bitragion Minimum Frontal Arc - Tape Holder	31
10 . Bitragion Pogonion Arc - Tape Holder	33
11 . Bizygomatic Diameter - Spreading Caliper	14.2
12 . Biprozygomatic Diameter - Spreading Caliper	13.4
13 . Menton-Sellion Diameter - Sliding Caliper	13.1
14 . Bizygomatic Diameter - Metric Gauge	14.8
15 . Biprozygomatic Diameter - Metric Gauge	13.8
16 . Menton Sellion Diameter Metric Gauge	13.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ARIAN BROPHY Subject No.: 83

S/N: ———— Sex: M Race. WHITE Age: 20

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	———	———
SCOTT	S	M	———	———
AVON US10	M	S	———	———

1 . Height: 170.2 cm 2 . Weight: 130 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	138
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.4
8 .	Bitragion Pogonion Arc - Tape Only	29.8
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	30
11 .	Bizygomatic Diameter - Spreading Caliper	14
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	14.7
15 .	Biprozygomatic Diameter - Metric Gauge	13.9
16 .	Menton Sellion Diameter - Metric Gauge	12.1

17 . Observation of Anomalies:

18 Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: BLACK (REPEAT) Subject No.: 84

S/N: ---------- Sex: M Race: ---------- Age: --

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: ----- cm 2 . Weight: --- lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	0
4 .	Submandibular Skinfold	0
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	0
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	0
7 .	Bitragion Minimum Frontal Arc - Tape Only	0
8 .	Bitragion Pogonion Arc - Tape Only	0
9 .	Bitragion Minimum Frontal Arc - Tape Holder	0
10 .	Bitragion Pogonion Arc - Tape Holder	0
11 .	Bizygomatic Diameter - Spreading Caliper	0
12 .	Biprozygomatic Diameter - Spreading Caliper	0
13 .	Menton-Sellion Diameter - Sliding Caliper	0
14 .	Bizygomatic Diameter - Metric Gauge	0
15 .	Biprozygomatic Diameter - Metric Gauge	0
16 .	Menton Sellion Diameter - Metric Gauge	0

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JAMES W. BUTLER Subject No.: 85

S/N: ---------- Sex: M Race: WHITE Age: 18

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON GS10	S	M	-----	-----

1 . Height: 172.7 cm 2 . Weight: 133 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	140
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	30
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	30
11 .	Bizygomatic Diameter - Spreading Caliper	13.3
12 .	Biprozygomatic Diameter - Spreading Caliper	12.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.1
14 .	Bizygomatic Diameter - Metric Gauge	13.8
15 .	Biprozygomatic Diameter - Metric Gauge	13.1
16 .	Menton Sellion Diameter - Metric Gauge	12.1

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (5 being worst case): -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JAY HEFFELBOWER Subject No.: 86

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 175.3 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	149
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	30.9
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.6
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14
15 .	Biprozygomatic Diameter - Metric Gauge	13.1
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: CARL LARIMER Subject No.: 87

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 185.4 cm 2 . Weight: 190 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	141
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Pogonion Arc - Tape Only	33
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	33
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JOEL MINDRUP Subject No.: 88

S/N: ---------- Sex: M Race: WHITE Age: 18

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 175.3 cm 2 . Weight: 136 lbs

		CR
3 .	Face Size - Adjustable Metric Template Circumference	120
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.4
8 .	Bitragion Pogonion Arc - Tape Only	31
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	31.2
11 .	Bizygomatic Diameter - Spreading Caliper	13.8
12 .	Biprozygomatic Diameter - Spreading Caliper	13.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	11.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JASON TENORIO Subject No.: 89

S/N: ---------- Sex: M Race: INDIAN Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	% Values: Expert Fit	% Values: Alternate Size
ILC	L	M	-----	-----
SCOTT	L	M	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 182.8 cm 2 . Weight: 170 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	182
4 .	Submandibular Skinfold	7
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	32.5
8 .	Bitragion Pogonion Arc - Tape Only	33.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	34.5
10 .	Bitragion Pogonion Arc - Tape Holder	33.5
11 .	Bizygomatic Diameter - Spreading Caliper	15.3
12 .	Biprozygomatic Diameter - Spreading Caliper	14.7
13 .	Menton-Sellion Diameter - Sliding Caliper	13.4
14 .	Bizygomatic Diameter - Metric Gauge	16.4
15 .	Biprozygomatic Diameter - Metric Gauge	15.4
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: JEFF BIRTWHISTLE Subject No.: 30

S/N: ---------- Sex: M Race: WHITE Age: 20

	Assigned Mask Size Category		FF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	----	----
SCOTT	M	S	----	----
AVON US10	M	S	----	----

1 . Height: 182.8 cm 2 . Weight: 177 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Submandibular Skinfold	6
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.8
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	36.5
8 .	Bitragion Pogonion Arc - Tape Only	32.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	33
11 .	Bizygomatic Diameter - Spreading Caliper	14.1
12 .	Biprozygomatic Diameter - Spreading Caliper	17
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	15
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: [redacted] NAILLON Subject No.: 91

S/N: [redacted] Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	———	———
SCOTT	M	L	———	———
AVON US10	S	M	———	———

1 . Height: 171.4 cm 2 . Weight: 149 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.8
8 .	Bitragion Pogonion Arc - Tape Only	30
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.7
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.4
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	13.8
15 .	Biprozygomatic Diameter - Metric Gauge	13.2
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RAMON PRIGAN Subject No.: 92

S/N: ---------- Sex: M Race: WHITE Age: 19

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 177.8 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	150
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	31.4
8 .	Bitragion Pogonion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	33.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.5
11 .	Bizygomatic Diameter - Spreading Caliper	14.7
12 .	Biprozygomatic Diameter - Spreading Caliper	14.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	15.5
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LOREN INDAHL Subject No.: 93

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	FF Values: Expert Fit	FF Values: Alternate Size
ILC	L	M	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 185 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	176
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.9
8 .	Bitragion Pogonion Arc - Tape Only	33
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	32
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	13.9
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13.5
16 .	Menton Sellion Diameter - Metric Gauge	14.5

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: BRADLEY BARNES Subject No.: 94

S/N: ---------- Sex: M Race: WHITE Age: 23

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 162.5 cm 2 . Weight: 128 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	139
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	29
8 .	Bitragion Pogonion Arc - Tape Only	31.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.2
12 .	Biprozygomatic Diameter - Spreading Caliper	12.7
13 .	Menton-Sellion Diameter - Sliding Caliper	12.2
14 .	Bizygomatic Diameter - Metric Gauge	13.2
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	12.4

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: THOMAS PIGORSH Subject No.: 95

S/N: ---------- Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 177.8 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	139
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.3
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.7
8 .	Bitragion Pogonion Arc - Tape Only	30.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32
10 .	Bitragion Pogonion Arc - Tape Holder	31.2
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.5
13 .	Menton-Sellion Diameter - Sliding Caliper	11.9
14 .	Bizygomatic Diameter - Metric Gauge	14.9
15 .	Biprozygomatic Diameter - Metric Gauge	14
16 .	Menton Sellion Diameter - Metric Gauge	11.7

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PAPILLION (REPEAT) Subject No.: 96

S/N: ---------- Sex: M Race: ---------- Age: --

MASK	Assigned Mask Size Category . Expert Fit	Assigned Mask Size Category . Alternate Size	PF Values Expert Fit	PF Values Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: ----- cm 2 . Weight: --- lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	0
4 .	Submandibular Skinfold	0
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	0
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	0
7 .	Bitragion Minimum Frontal Arc - Tape Only	0
8 .	Bitragion Pogonion Arc - Tape Only	0
9 .	Bitragion Minimum Frontal Arc - Tape Holder	0
10 .	Bitragion Pogonion Arc - Tape Holder	0
11 .	Bizygomatic Diameter - Spreading Caliper	0
12 .	Biprozygomatic Diameter - Spreading Caliper	0
13 .	Menton-Sellion Diameter - Sliding Caliper	0
14 .	Bizygomatic Diameter - Metric Gauge	0
15 .	Biprozygomatic Diameter - Metric Gauge	0
16 .	Menton Sellion Diameter - Metric Gauge	0

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: BRIAN IMHOFF Subject No.: 97

S/N: ---------- Sex: M Race: WHITE Age: 19

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 177.8 cm 2 . Weight: 145 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	120
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	17.9
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	24
7 .	Bitragion Minimum Frontal Arc - Tape Only	28
8 .	Bitragion Pogonion Arc - Tape Only	28.7
9 .	Bitragion Minimum Frontal Arc - Tape Holder	30.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.5
11 .	Bizygomatic Diameter - Spreading Caliper	12.5
12 .	Biprozygomatic Diameter - Spreading Caliper	11.7
13 .	Menton-Sellion Diameter - Sliding Caliper	11.4
14 .	Bizygomatic Diameter - Metric Gauge	13.3
15 .	Biprozygomatic Diameter - Metric Gauge	12.6
16 .	Menton Sellion Diameter - Metric Gauge	11.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) .....

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DENNIS CHRISTIE Subject No.: 92

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: 172.7 cm 2 . Weight: 168 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	140
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.7
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.2
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.9
12 .	Biprozygomatic Diameter - Spreading Caliper	13.3
13 .	Menton-Sellion Diameter - Sliding Caliper	11.7
14 .	Bizygomatic Diameter - Metric Gauge	14.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.9
16 .	Menton Sellion Diameter - Metric Gauge	11.8

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: GERALD KAISER Subject No.: 99

S/N: ---------- Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 155 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	155
4 . Submandibular Skinfold	4
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20
6 . Biprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 . Bitragion Minimum Frontal Arc - Tape Only	30.6
8 . Bitragion Pogonion Arc - Tape Only	32.2
9 . Bitragion Minimum Frontal Arc - Tape Holder	33.2
10 . Bitragion Pogonion Arc - Tape Holder	32.2
11 . Bizygomatic Diameter - Spreading Caliper	13.4
12 . Biprozygomatic Diameter - Spreading Caliper	12.2
13 . Menton-Sellion Diameter - Sliding Caliper	12.8
14 . Bizygomatic Diameter - Metric Gauge	14.1
15 . Biprozygomatic Diameter - Metric Gauge	13
16 . Menton Sellion Diameter - Metric Gauge	12.3

17 . Observation of Anomalies:

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18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: WARREN (REPEAT) Subject No.: 100

S/N: ---------- Sex: M Race: ---------- Age: --

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	S	M	-----	-----

1 . Height: ----- cm 2 . Weight: --- lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	0
4 .	Submandibular Skinfold	0
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	0
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	0
7 .	Bitragion Minimum Frontal Arc - Tape Only	0
8 .	Bitragion Pogonion Arc - Tape Only	0
9 .	Bitragion Minimum Frontal Arc - Tape Holder	0
10 .	Bitragion Pogonion Arc - Tape Holder	0
11 .	Bizygomatic Diameter - Spreading Caliper	0
12 .	Biprozygomatic Diameter - Spreading Caliper	0
13 .	Menton-Sellion Diameter - Sliding Caliper	0
14 .	Bizygomatic Diameter - Metric Gauge	0
15 .	Biprozygomatic Diameter - Metric Gauge	0
16 .	Menton Sellion Diameter - Metric Gauge	0

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... --

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: BENNY PHILLIPS Subject No.: 101

S/N: ---------- Sex: M Race: WHITE Age: 28

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 190 lbs

	cm
3 . Face Size - Adjustable Metric Template Circumference	142
4 . Submandibular Skinfold	6
5 . Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	18.9
6 . Piprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 . Bitragion Minimum Frontal Arc - Tape Only	30.4
8 . Bitragion Pogonion Arc - Tape Only	31.2
9 . Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 . Bitragion Pogonion Arc - Tape Holder	31.2
11 . Bizygomatic Diameter - Spreading Caliper	14.1
12 . Biprozygomatic Diameter - Spreading Caliper	13.2
13 . Menton-Sellion Diameter - Sliding Caliper	11.6
14 . Bizygomatic Diameter - Metric Gauge	14.6
15 . Biprozygomatic Diameter - Metric Gauge	13.8
16 . Menton Sellion Diameter - Metric Gauge	11.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: LANIER (REPEAT) Subject No.: 102

S/N: ---------- Sex: M Race: ---------- Age. --

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	M	S	-----	-----
AVON US10	S	M	-----	-----

1 . Height: ----- cm 2 . Weight: --- lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	0
4 .	Submandibular Skinfold	0
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	0
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	0
7 .	Bitragion Minimum Frontal Arc - Tape Only	0
8 .	Bitragion Pogonion Arc - Tape Only	0
9 .	Bitragion Minimum Frontal Arc - Tape Holder	0
10 .	Bitragion Pogonion Arc - Tape Holder	0
11 .	Bizygomatic Diameter - Spreading Caliper	0
12 .	Biprozygomatic Diameter - Spreading Caliper	0
13 .	Menton-Sellion Diameter - Sliding Caliper	0
14 .	Bizygomatic Diameter - Metric Gauge	0
15 .	Biprozygomatic Diameter - Metric Gauge	0
16 .	Menton Sellion Diameter - Metric Gauge	0

17 . Observation of Anomalies.

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: DONALD COCHRAN Subject No.: 103

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	----	----
SCOTT	L	M	----	----
AVON US10	M	L	----	----

1 . Height: 185.4 cm 2 . Weight: 210 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	153
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.5
8 .	Bitragion Pogonion Arc - Tape Only	32.8
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.9
11 .	Bizygomatic Diameter - Spreading Caliper	14.3
12 .	Biprozygomatic Diameter - Spreading Caliper	13.4
13 .	Menton-Sellion Diameter - Sliding Caliper	13.3
14 .	Bizygomatic Diameter - Metric Gauge	15.2
15 .	Biprozygomatic Diameter - Metric Gauge	14.3
16 .	Menton Sellion Diameter - Metric Gauge	13.3

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: RUSSELL LOUDERMILK Subject No.: 104

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 180.3 cm 2 . Weight: 179 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	144
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.6
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.3
8 .	Bitragion Pogonion Arc - Tape Only	31.6
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.4
10 .	Bitragion Pogonion Arc - Tape Holder	31.7
11 .	Bizygomatic Diameter - Spreading Caliper	13.8
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.9
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	13

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: TODD SCHNEEKLOTH Subject No.: 105

S/N: ---------- Sex: M Race: WHITE Age: 18

	Assigned Mask Size Category		PF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 185.4 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	138
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26.7
7 .	Bitragion Minimum Frontal Arc - Tape Only	29
8 .	Bitragion Pogonion Arc - Tape Only	32.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.5
10 .	Bitragion Pogonion Arc - Tape Holder	32.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	13
13 .	Menton-Sellion Diameter - Sliding Caliper	12.7
14 .	Bizygomatic Diameter - Metric Gauge	14.5
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	12.7

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: STANLEY HALCOMB Subject No.: 106

S/N: ---------- Sex: M Race: WHITE Age: 27

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 175.3 cm 2 . Weight: 144 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	118
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.1
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	23.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	27
8 .	Bitragion Pogonion Arc - Tape Only	29
9 .	Bitragion Minimum Frontal Arc - Tape Holder	29.5
10 .	Bitragion Pogonion Arc - Tape Holder	29.4
11 .	Bizygomatic Diameter - Spreading Caliper	13
12 .	Biprozygomatic Diameter - Spreading Caliper	11.9
13 .	Menton-Sellion Diameter - Sliding Caliper	11.5
14 .	Bizygomatic Diameter - Metric Gauge	13.4
15 .	Biprozygomatic Diameter - Metric Gauge	12.4
16 .	Menton Sellion Diameter - Metric Gauge	11.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PAUL LAFLESH Subject No.: 107

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 170.2 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	133
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.6
8 .	Bitragion Pogonion Arc - Tape Only	30
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.8
12 .	Biprozygomatic Diameter - Spreading Caliper	13
13 .	Menton-Sellion Diameter - Sliding Caliper	11.8
14 .	Bizygomatic Diameter - Metric Gauge	14.3
15 .	Biprozygomatic Diameter - Metric Gauge	13.2
16 .	Menton Sellion Diameter - Metric Gauge	11.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: NOLEN KELLER Subject No.: 108

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category		FF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	S	M	-----	-----
SCOTT	S	M	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 180.3 cm 2 . Weight: 160 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	139
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.5
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25
7 .	Bitragion Minimum Frontal Arc - Tape Only	30
8 .	Bitragion Pogonion Arc - Tape Only	30.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.5
10 .	Bitragion Pogonion Arc - Tape Holder	30.5
11 .	Bizygomatic Diameter - Spreading Caliper	13.6
12 .	Biprozygomatic Diameter - Spreading Caliper	12.8
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Biprozygomatic Diameter - Metric Gauge	13
16 .	Menton Sellion Diameter - Metric Gauge	12

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: PAUL LUDWICK Subject No.. 109

S/N: ---------- Sex: M Race: WHITE Age: 27

	Assigned Mask Size Category		FF Values	
MASK	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	S	-----	-----

1 . Height: 193 cm 2 . Weight: 180 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	152
4 .	Submandibular Skinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	20.7
6 .	Bipronzygomatic Menton Arc - Tape and Marker Tool	26
7 .	Bitragion Minimum Frontal Arc - Tape Only	32
8 .	Bitragion Subnasion Arc - Tape Only	32.1
9 .	Bitragion Minimum Frontal Arc - Tape Holder	34
10 .	Bitragion Subnasion Arc - Tape Holder	32
11 .	Bizygomatic Diameter - Spreading Caliper	14.6
12 .	Bizygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	12.5
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Bipronzygomatic Diameter - Metric Gauge	14.2
16 .	Menton Sellion Diameter - metric Gauge	12.-

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: TIMOTHY DANIEL Subject No.: 110

S/N: ---------- Sex: M Race: WHITE Age: 22

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 155 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	143
4 .	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.7
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	25.5
7 .	Bitragion Minimum Frontal Arc - Tape Only	29.5
8 .	Bitragion Foosnion Arc - Tape Only	32
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.2
10 .	Bitragion Foosnion Arc - Tape Holder	32
11 .	Bizygomatic Diameter - Spreading Caliper	14.2
12 .	Biprozygomatic Diameter - Spreading Caliper	13.7
13 .	Menton-Sellion Diameter - Sliding Caliper	12.3
14 .	Bizygomatic Diameter - Metric Gauge	14.7
15 .	Biprozygomatic Diameter - Metric Gauge	13.6
16 .	Menton Sellion Diameter - Metric Gauge	12.9

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: WILLIAM BARNETT Subject No.: 111

S/N: ---------- Sex: M Race: WHITE Age: 19

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	L	-----	-----
SCOTT	L	M	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 178 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	149
4 .	Submandibular Chinfold	3
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.5
6 .	Bizygomatic Menton Arc - Tape and Marker Tool	26.2
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.2
8 .	Bitragion Pogonion Arc - Tape Only	31.3
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31
10 .	Bitragion Pogonion Arc - Tape Holder	31.3
11 .	Bizygomatic Diameter - Spreading Caliper	13.7
12 .	Bizygomatic Diameter - Spreading Caliper	12.9
13 .	Menton Sellion Diameter - Sliding Caliper	13.2
14 .	Bizygomatic Diameter - Metric Gauge	14.4
15 .	Bizygomatic Diameter - Metric Gauge	13.4
16 .	Menton Sellion Diameter - Metric Gauge	13.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: ROBERT POLITO Subject No.: 112

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category		PF Values	
	Expert Fit	Alternate Size	Expert Fit	Alternate Size
ILC	M	S	-----	-----
SCOTT	M	S	-----	-----
AVON US1C	M	L	-----	-----

1 . Height: 172.7 cm 2 . Weight: 145 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	141
4	Submandibular Skinfold	4
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	26
7 .	Bitragion Minimum Frontal Arc - Tape Only	28.5
8 .	Bitragion Pogonion Arc - Tape Only	31
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.7
10 .	Bitragion Pogonion Arc - Tape Holder	31
11 .	Bizygomatic Diameter - Spreading Caliper	13.4
12 .	Biprozygomatic Diameter - Spreading Caliper	12.7
13 .	Menton-Sellion Diameter - Sliding Caliper	13.3
14 .	Bizygomatic Diameter - Metric Gauge	13.9
15 .	Biprozygomatic Diameter - Metric Gauge	12.8
16 .	Menton Sellion Diameter - Metric Gauge	13.4

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: KEITH FANG Subject No.: 113

S/N: ---------- Sex: M Race: WHITE Age: 18

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	L	M	-----	-----
SCOTT	L	M	-----	-----
AVON US10	L	M	-----	-----

1 . Height: 190.5 cm 2 . Weight: 173 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	164
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.6
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	34.5
9 .	Bitragion Minimum Frontal Arc - Tape Holder	31.9
10 .	Bitragion Pogonion Arc - Tape Holder	33.7
11 .	Bizygomatic Diameter - Spreading Caliper	13.8
12 .	Biprozygomatic Diameter - Spreading Caliper	13.2
13 .	Menton-Sellion Diameter - Sliding Caliper	12.8
14 .	Bizygomatic Diameter - Metric Gauge	14.2
15 .	Biprozygomatic Diameter - Metric Gauge	13.7
16 .	Menton Sellion Diameter - Metric Gauge	12.6

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

DATA/INFORMATION FORM
TESTING AT CRDC
SIZE DETERMINATION XM40 MASK

A . Name: SOHN COX Subject No.: 114

S/N: ---------- Sex: M Race: WHITE Age: 20

MASK	Assigned Mask Size Category: Expert Fit	Assigned Mask Size Category: Alternate Size	PF Values: Expert Fit	PF Values: Alternate Size
ILC	M	L	-----	-----
SCOTT	M	L	-----	-----
AVON US10	M	L	-----	-----

1 . Height: 182.8 cm 2 . Weight: 173 lbs

		cm
3 .	Face Size - Adjustable Metric Template Circumference	148
4 .	Submandibular Skinfold	5
5 .	Bitemporal Fossa - Minimum Frontal Arc - Tape and Marker Tool	19.4
6 .	Biprozygomatic Menton Arc - Tape and Marker Tool	27.3
7 .	Bitragion Minimum Frontal Arc - Tape Only	30.2
8 .	Bitragion Pogonion Arc - Tape Only	35.2
9 .	Bitragion Minimum Frontal Arc - Tape Holder	32.3
10 .	Bitragion Pogonion Arc - Tape Holder	35
11 .	Bizygomatic Diameter - Spreading Caliper	14.5
12 .	Biprozygomatic Diameter - Spreading Caliper	14.1
13 .	Menton-Sellion Diameter - Sliding Caliper	12
14 .	Bizygomatic Diameter - Metric Gauge	15.1
15 .	Biprozygomatic Diameter - Metric Gauge	14.8
16 .	Menton Sellion Diameter - Metric Gauge	12.2

17 . Observation of Anomalies:

18 . Comfort 0 - 5 (0 being worst case) ..... -

APPENDIX G

Example: Principle Component Analysis

PRINCIPAL COMPONENT ANALYSIS EXAMPLE

EXAMPLE (Dunn, G. and Everitt, B. S. "An Introduction to Mathematical Taxonomy" Cambridge University Press, New York, 1982, pg 51.)

In this study the carapace length, width and height were measured for numerous turtles. Principal components analysis resulted in the following components:

$$Y1 = 0.81(\text{length}) + .050(\text{width}) + 0.31(\text{height}) \quad 98.64\%$$

$$Y2 = -0.54(\text{length}) + .083(\text{width}) + 0.94(\text{height}) \quad 0.95\%$$

$$Y3 = -0.20(\text{length}) - 0.25(\text{width}) + 0.94(\text{height}) \quad 0.41\%$$

The percentage following each equation is the percent of the total variability which the corresponding principal component has accounted for. In this case the first principal component accounted for 98.6% of the total variability in the data. The interpretation of the first principal component for physical objects is typically related to overall size. Notice that all of the coefficients are positive so that increases in either height, width or length would increase Y1, the score for size. Thus Y1 scores for each turtle could be substituted for height, width and weight without loss of much information relevant to overall size.

The second and third principal components correspond to two different expressions of shape. Y2 contrasts length to (width + height) while Y3 contrasts height to (length plus width). In studies such as this and also the face size study, the second principal components is typically related to shape while the first is related to size.

APPENDIX H

Recommendations for S/M and M/L Dividing Points

A. S/M and M/L Dividing Points, TM Series, company by company (excluding preceding data). For this set of recommendations, Dr. A. T. Steegman ranked the best dividing point predictors from those which showed the least overlap to those with the most. Only the first seven with moderate to good predictive power are listed (Excellent: best, fair* worst).

1. ILC Mask:

   a. #7 + #8 (Ear-Forehead Arch + Ear Chin Arc): S/M = 61.3 cm (fair); M/L = 63.8 cm (good)

   b. #10 (Ear-Chin Arc,, H): S/M = 31.3 cm (fair)

   c. Size factor 2) 1/2 Ear-Frontal Arc + 1/2 Ear + Face width): = 44.7 cm (fair); M/L = 45.9 cm (fair)

   d. #8 (Ear-Chin Arc): M/L = 33.2 cm (good)

   e. #6 (Cheekbone-Chin Arc): S/M = 25.6 cm (fair)

   f. #3 (Adj. Template): M/L = 163 cm (fair)

   g. #2 (weight): M/L = 179 lb. (good)

   h. #9 (Ear-Forehead Arc, H): M/L = 32.5 cm (good)

2. Scott Mask

   a. #6 (Cheekbone-Chin Arc): S/M = 25.3 cm (good); M/L = 26.6 cm (good)

   b. #13 (Face Height): S/M=12.1 cm (good); M/L =12.8 cm (good)

   c. #3 (Adj. Template): S/M = 143 cm (good); M/L = 162 cm (good)

   d. #12 + 1/2 #6 (Cheekbone Width + 1/2 Cheekbone-Chin-Arc): S/M = 25.8 cm (fair); M/L = 26.8 cm (fair)

   e. #14 (Face Ht., G): M/L = 13.0 cm (fair)

f. #5 (Temple-Forehead Arc): M/L = 19.5 cm (good)

g. #2 (Height): M/L = 182 cm (fair)

3. Avon Mask

a. Size Factor 2 (1/2 Ear-Frontal Arc + 1/2 Chin Arc + Face Width): M/L = 45.8 cm (good)

b. #8 (Ear-Chin Arc): M/L = 33.3 cm (excellent)

c. #7 + #8 (Ear-Chin + Ear Forehead Arc): M/L = 63.2 cm (excellent)

d. #6 (Cheekbone-Chin Arc): S/M = 25.5 cm (good)

e. #10 (Ear-Chin Arc, H): M/L = 32.5 cm (good)

f. #3 (Adj. Template): M/L = 162 cm (good)

g. #7 (Ear-Forehead Arc, H): M/L = 32.6 cm (good)

B. S/M and M/L Dividing, BF Series

Although a full set of data were run for this analysis, it will be given more simple treatment than the TM series. Here Dr. Steegman simply listed the top ranked predictor for each company, without considering the univariate or bivariate issue. All are ranked by how well they predict both S/M and M/L, though only one may be given if the other is poor.

1. Recommendation for prediction (dividing) points ILC masks.

a. #7 + #8 (Ear-Forehead Arc + Ear-Chin Arc)

1) S/M clearly at 61.5 cm

2) M/L poorly at 63.3 cm

b. #2 (Weight)

1) S/M poorly at 160 lb.

2) M/L clearly at 180 lb.

c. #5 (Temple-Forehead Arc)

1) M/L clearly at 19.5 cm

d. Shape I, #3 (#12-Cheekbone Wd.(1/2)#6 Cheekbone-Chin Arc)

1) M/L clearly at 0.970

e. Shape I, #1 (#12-Cheekbone Wd.#13 Face Height)

1) M/L clearly at 1.020

f. #6 (Cheekbone-Chin Arc)

1) M/L fair at 25.5 cm

g. #5 + #6 (Temple-Forehead + Cheekbone-Chin Arc)

1) M/L fair at 45.9 cm

2. Recommendation for prediction (dividing points), Scott Masks

a. #7 (Ear-Forehead Arc)

1) M/L clearly at 30.1 cm

b. #6 (Cheekbone-Chin Arc)

1) S/M clearly at 25.4 cm

c. #3 (Adj. Template)

1) S/M fair at 144 cm

d. #13 (Face Height)

1) S/M fair at 12.1 cm

-NO OTHERS ACCEPTABLE-

3. Recommendations for Prediction (dividing) points, Avon Masks

a. #3 (Adj. Template)

1) S/M clearly at 140 cm

b. Size #2 (1/2 #7, Ear Frontal Arc + 1/2 #8 Ear-Chin Arc + #11, Face Width)

1) S/M fair at 44.0 cm

c. #7 + #8 (Ear-Forehead Arc and Ear-Chin Arc)

1) S/M clearly at 60.2 cm

d. #8 (Ear-Chin Arc)

1) S/M clearly at 31.0 cm

e. #13 (Face Height)

1) S/M clearly at 12.3 cm

f. #14 + #16 (face Wd., G + Face Height, G)

1) S/M fair at 26.7 cm

C. S/M and M/L Dividing Points, PF Series

The treatment is that given the BF Series, preceding.

1. Recommendation for Prediction (dividing) points for ILC Masks.

a) #5 + #6 (Temple-Forehead Arc + Cheekbone- Chin Arc)

1) S/M poorly at 44.2 cm

2) M/L clearly at 46.0 cm

b) #7 (Ear-Forehead Arc)

1) S/M poorly at 29.5 cm

2) M/L clearly at 30.3 cm

c) #5 (Temple-Forehead Arc)

1) M/L clearly at 19.5 cm

d) #6 (Cheekbone-Chin Arc)

1) M/L clearly at 26.5 cm

e) Size Factor 2 (1/2 #7, Ear Frontal Arc + 1/2 #8, Ear-Chin Arc + #11, Face Width)

1) S/M clearly at 44.5 cm

f) #11 + #13 (Face Width + Face Height, Gauge)

1) M/L clearly at 27.3 cm

2. Recommendation for (dividing) points for Scott Masks

a) #5 + #6 (Temple-Forehead Arc + Cheekbone Chin Arc)

1) S/M fair at 44.7 cm

b) #7 + #8 (Ear-Frontal Arc + Ear-Chin Arc)

1) S/M fair at 61.3 cm

c) #6 (Cheekbone-Chin Arc)

1) S/M clearly at 25.2 cm

d) #12 + 1/2 #6 (Cheekbone Wd. + 1/2 Cheekbone-Chin-Arc)

1) S/M poorly at 25.8 cm

e) #2 (Weight)

1) S/M clearly at 158 lb.

f) #5 (Temple-Forehead Arc)

1) M/L clearly at 19.4 cm

3. Recommendation for Prediction (dividing) Points for Avon Masks.

a) #3 (Adj. Template)

1) S/M clearly at 140

2) M/L clearly at 157

b) #7 + #8 (Ear-Forehead Arc + Ear-Chin Arc)

1) S/M - excellent separation at 61.0 cm

c) #7 (Ear-Forehead Arc)

1) S/M clearly at 29.5 cm

d) #6 (Cheekbone-Chin Arc)

1) S/M clearly at 25.5 cm

e) Size Factor 2 (1/2 #7, Ear-Frontal Arc + 1/2 #8, Ear-Chin Arc, + #11, Face width)

1) S/M clearly at 44.3 cm

f) #8 (Ear-Chin Arc)

1) S/M clearly at 31.3 cm

g) #9 + #10 (Ear-Forehead Arc + Ear-Chin Arc)

1) S/M clearly at 62.7 cm

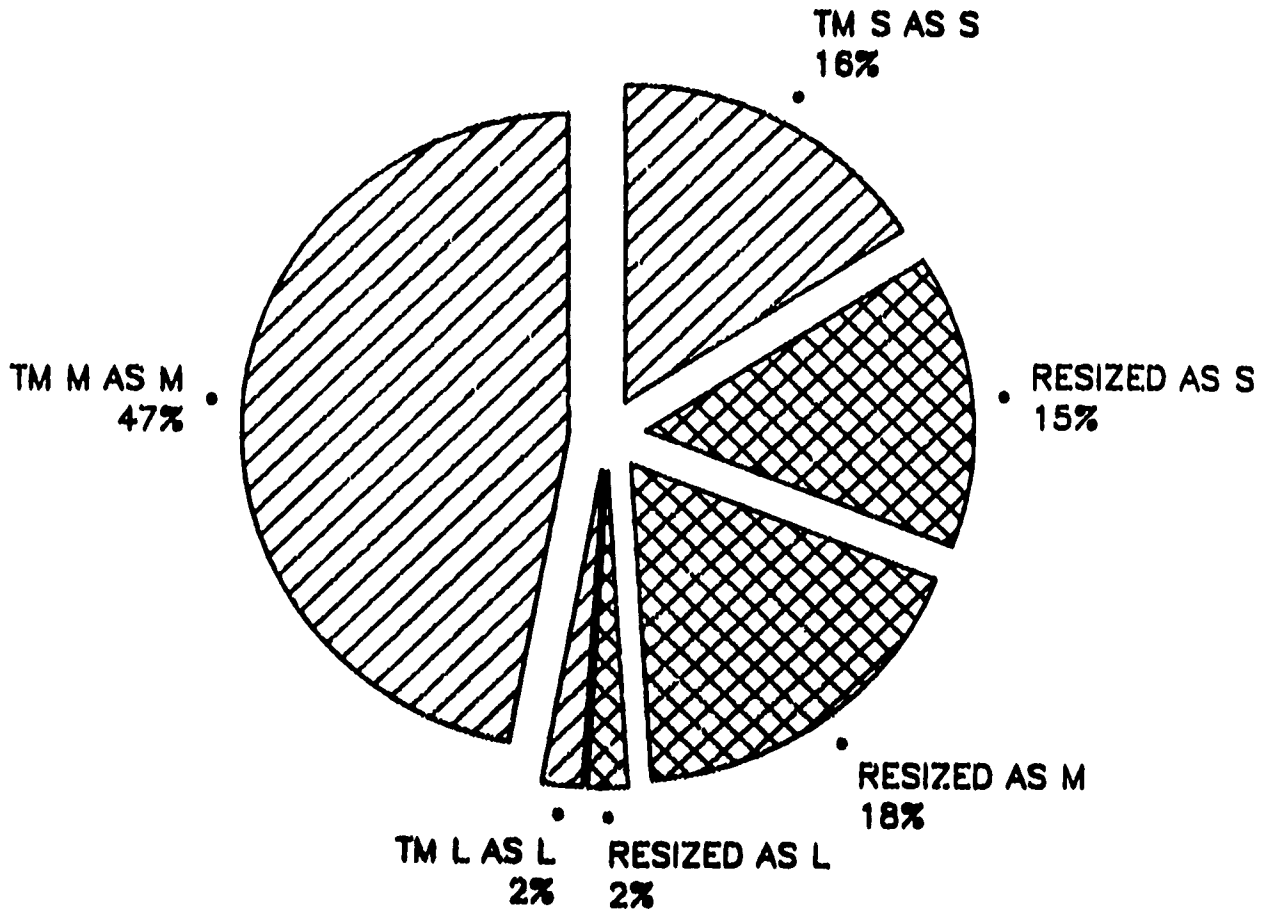
APPENDIX I

Size Line Analysis Results

APPENDIX J1

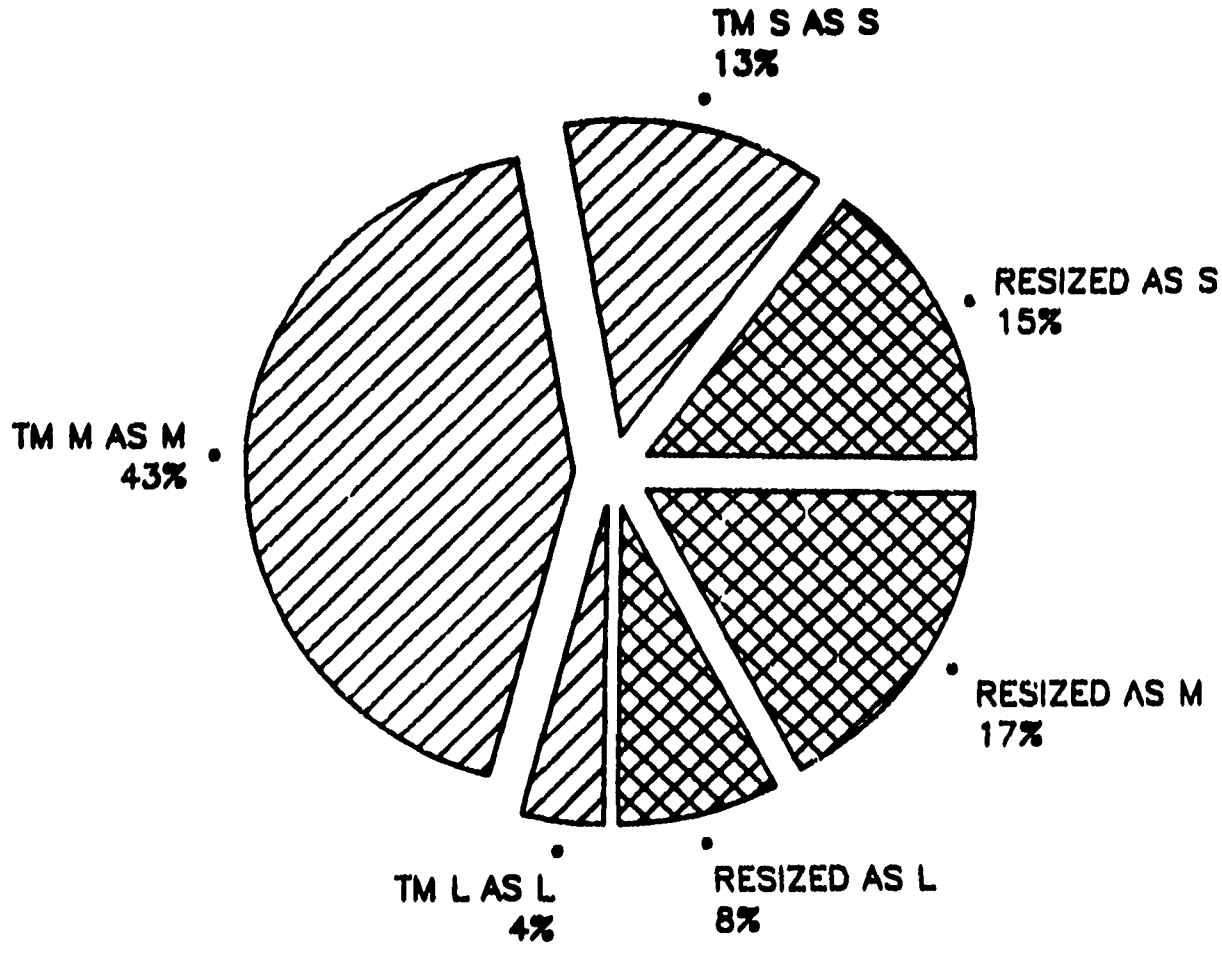
SCOTT XM40 Size Line Analysis Results

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



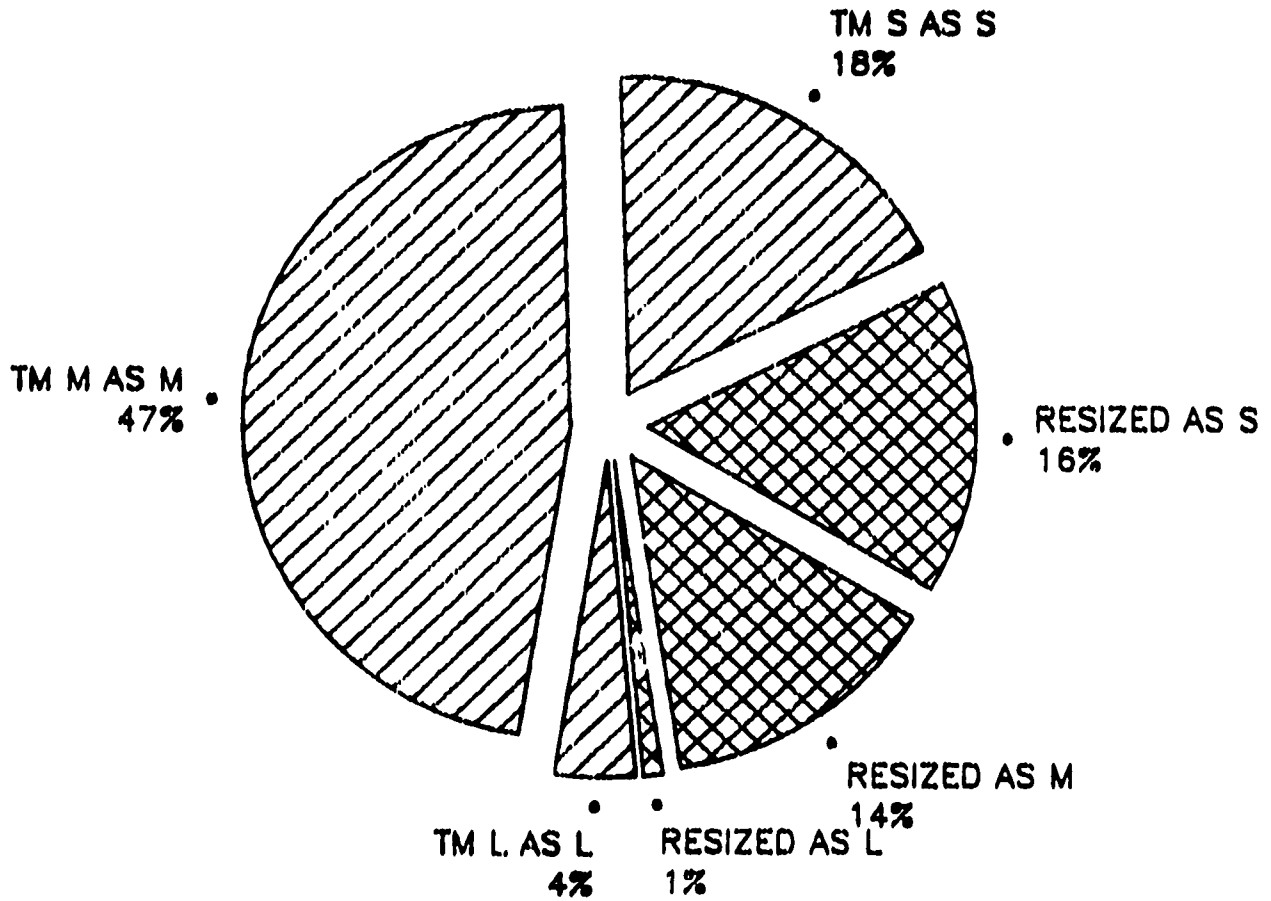
METHOD 3

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



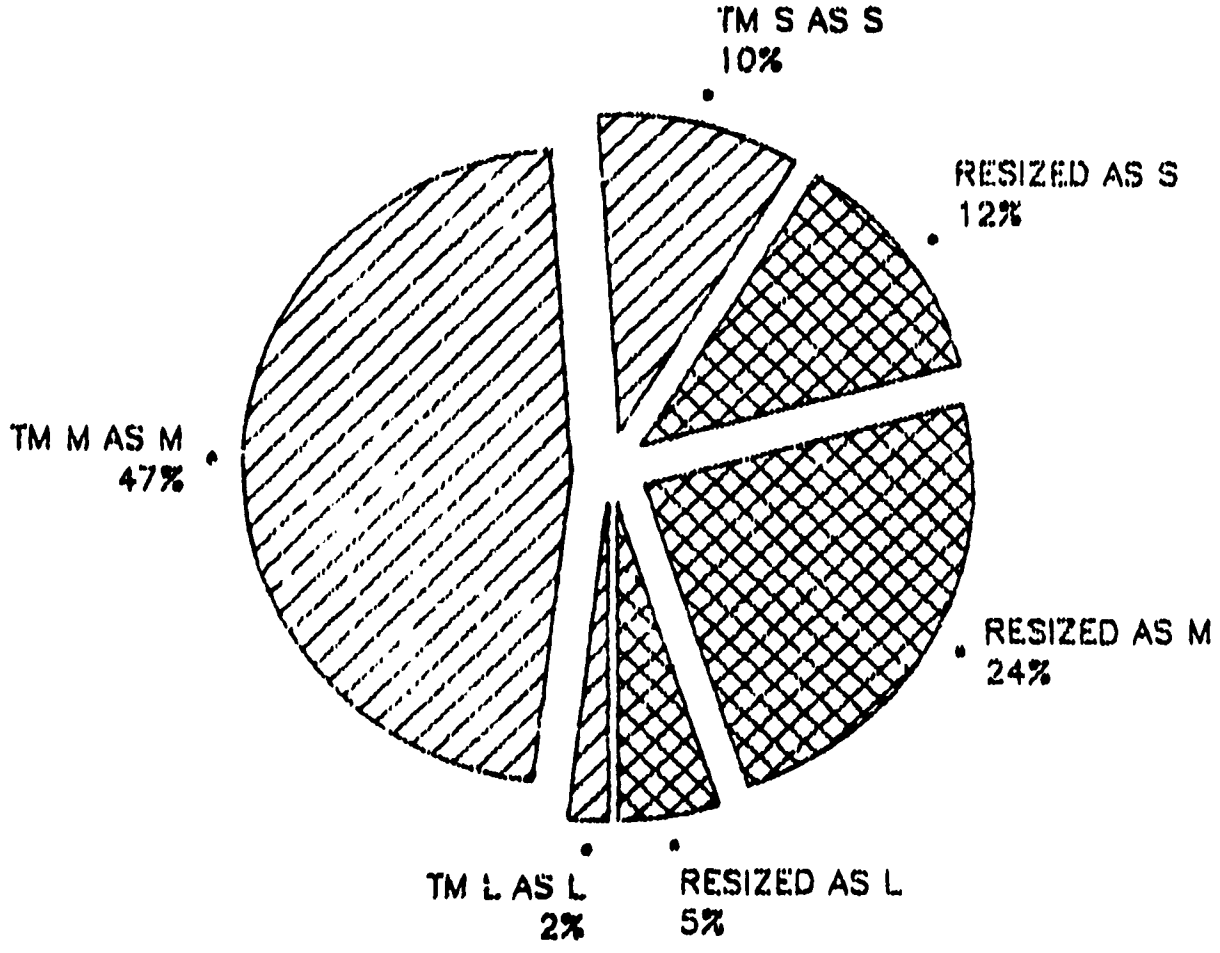
METHOD 5

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



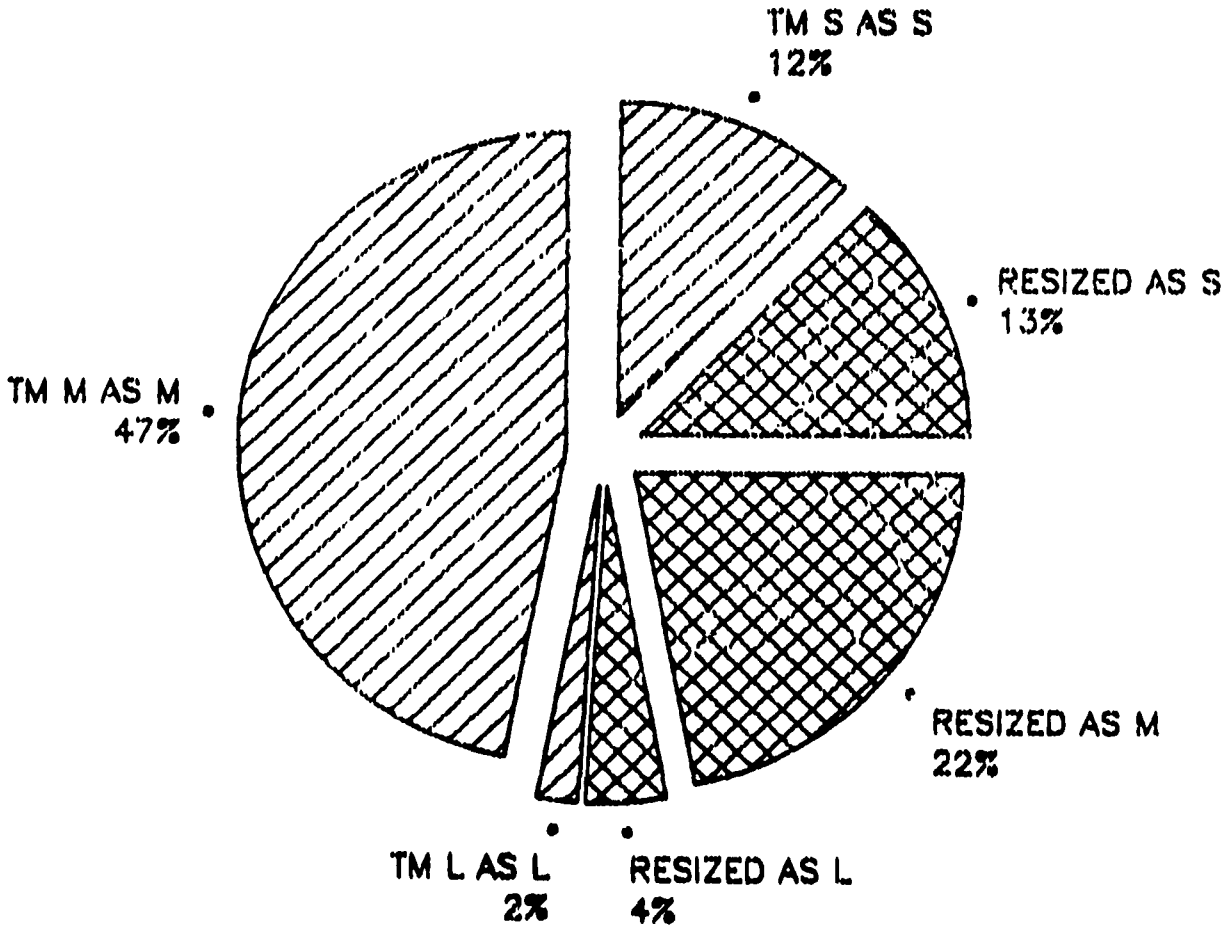
METHOD 6

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



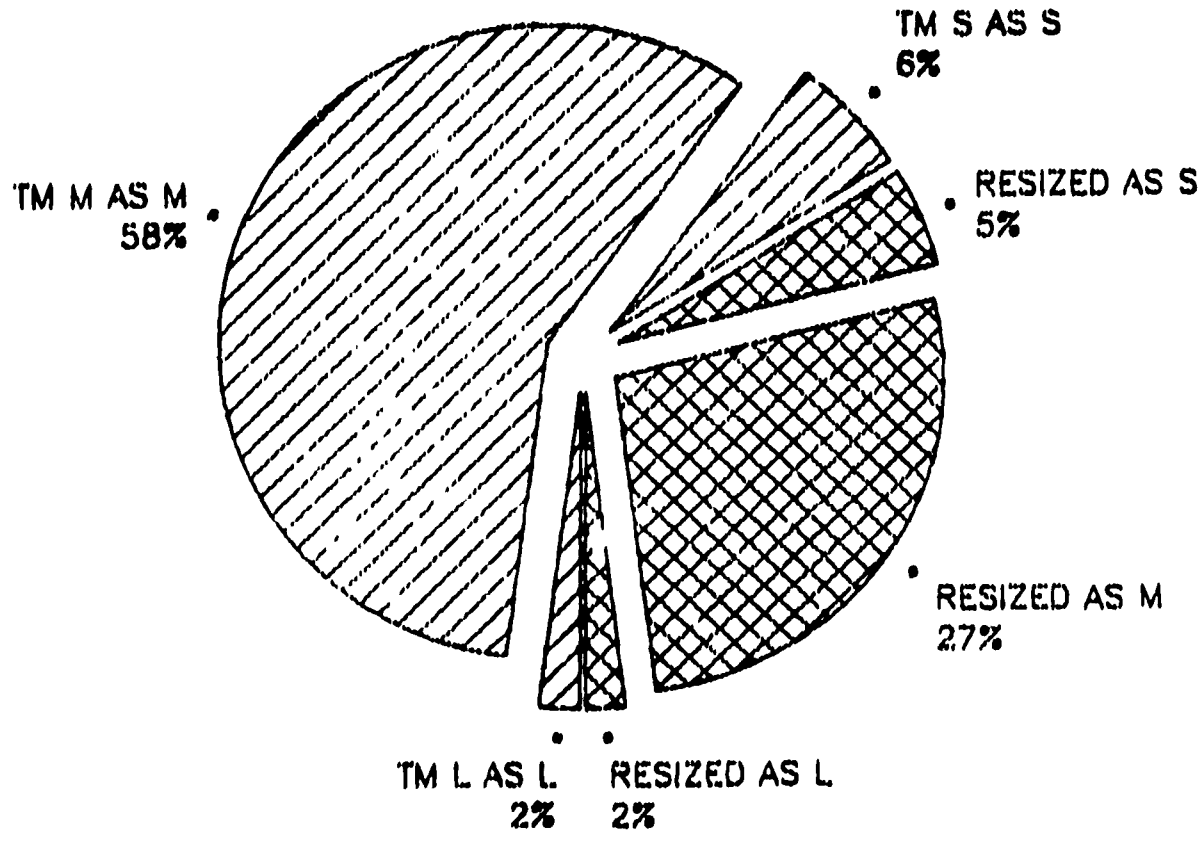
METHOD 7

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



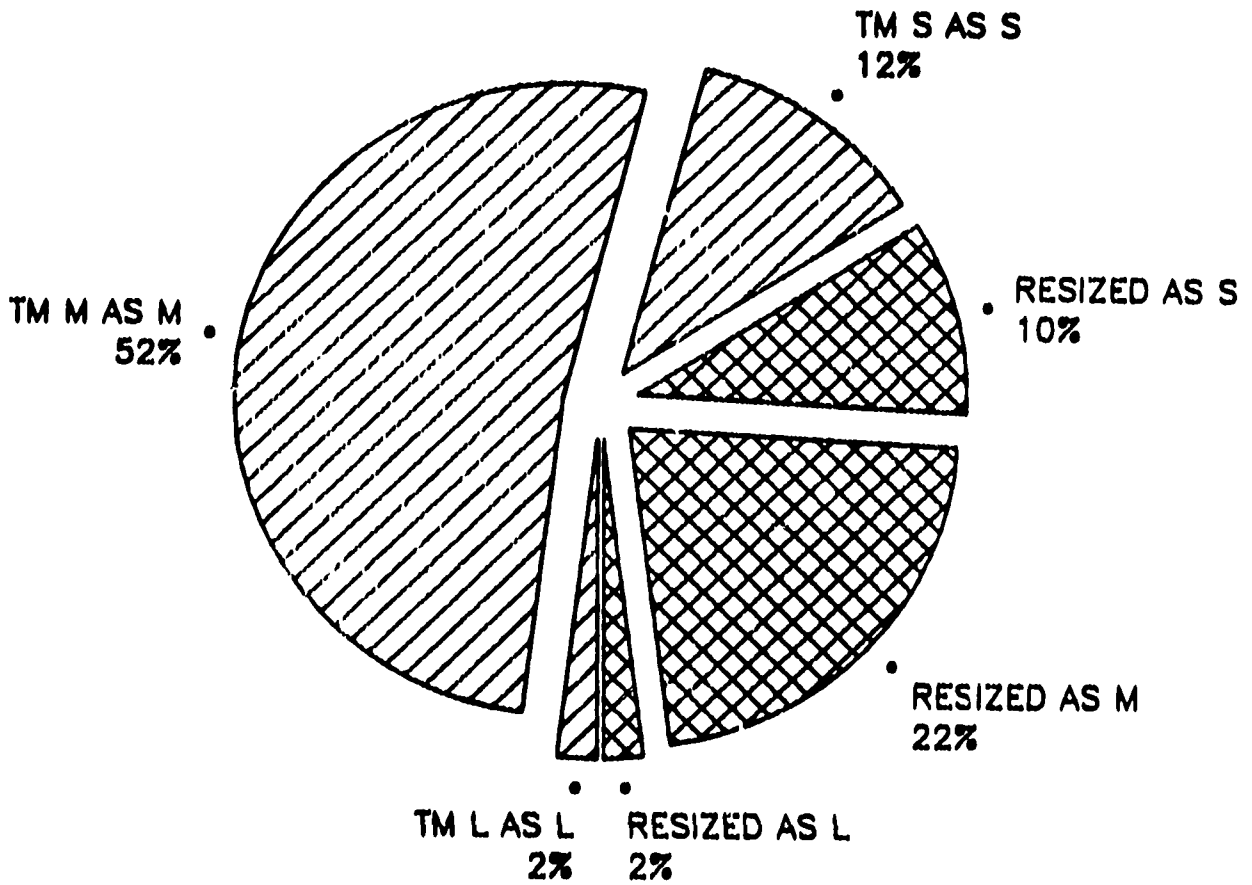
METHOD 8

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



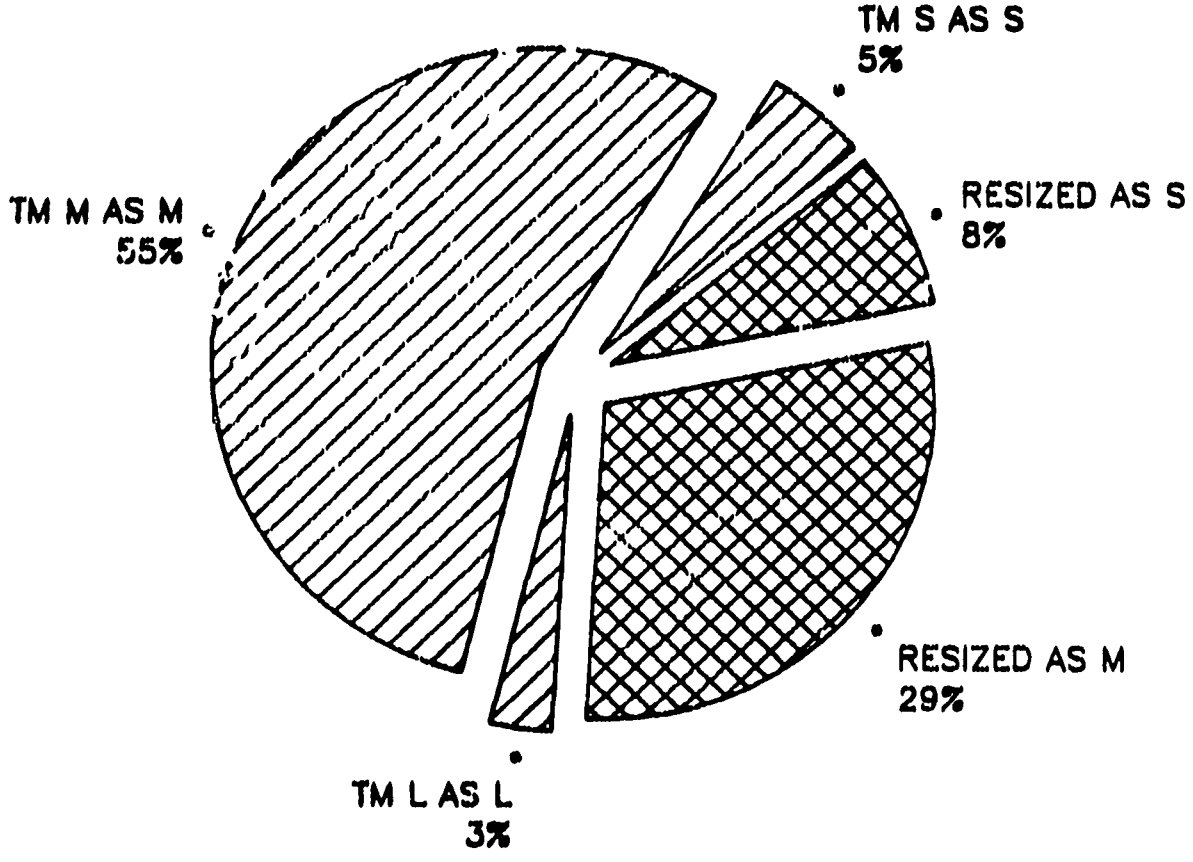
METHOD 9

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



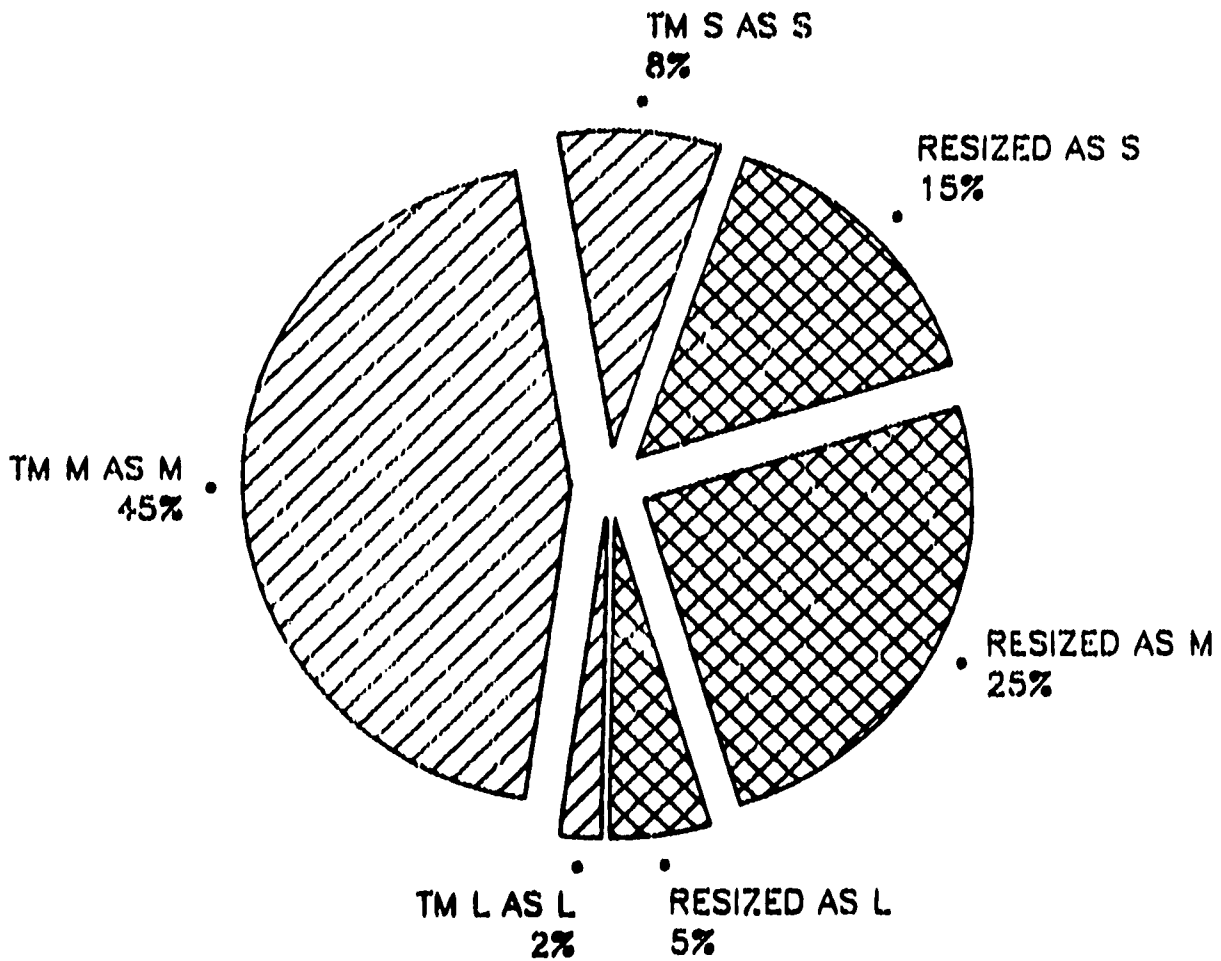
METHOD 10

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



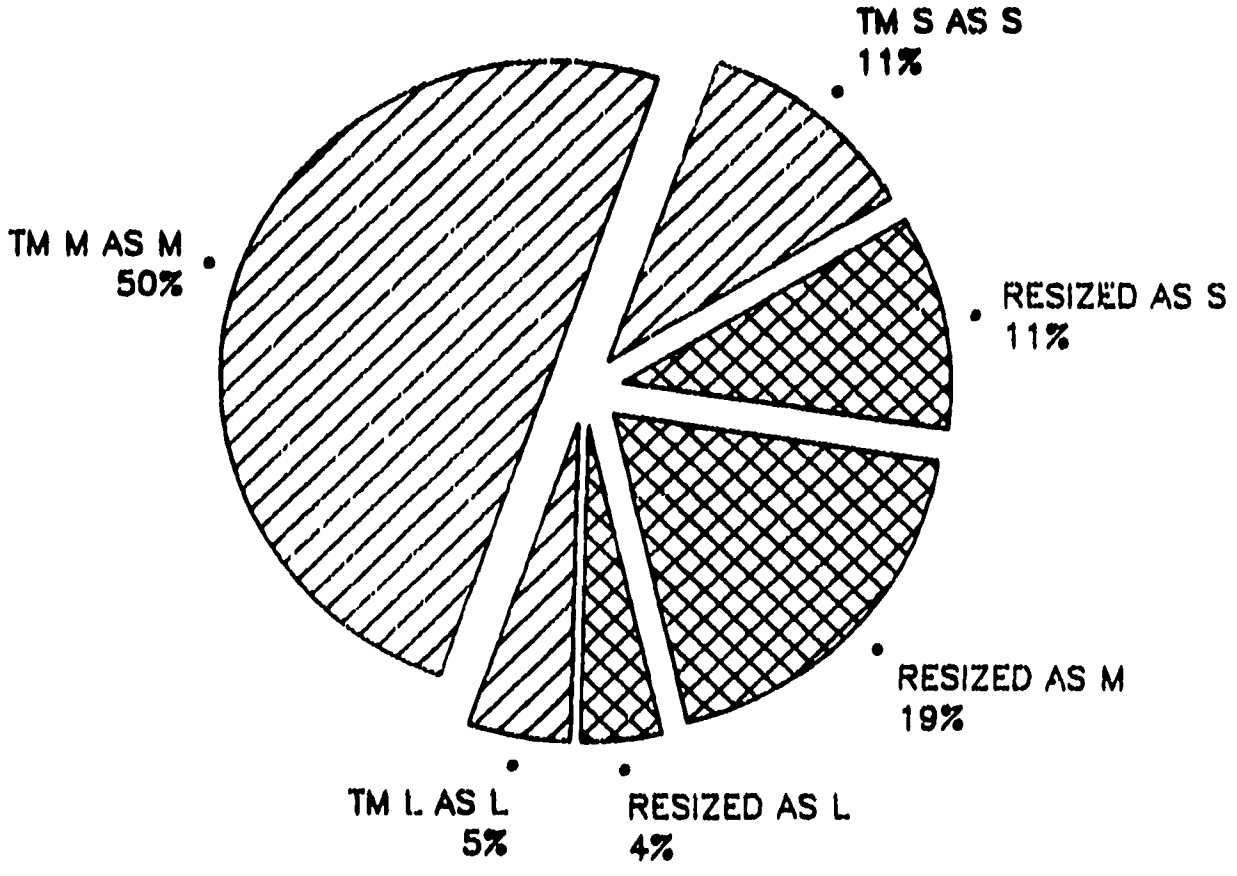
METHOD 11

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



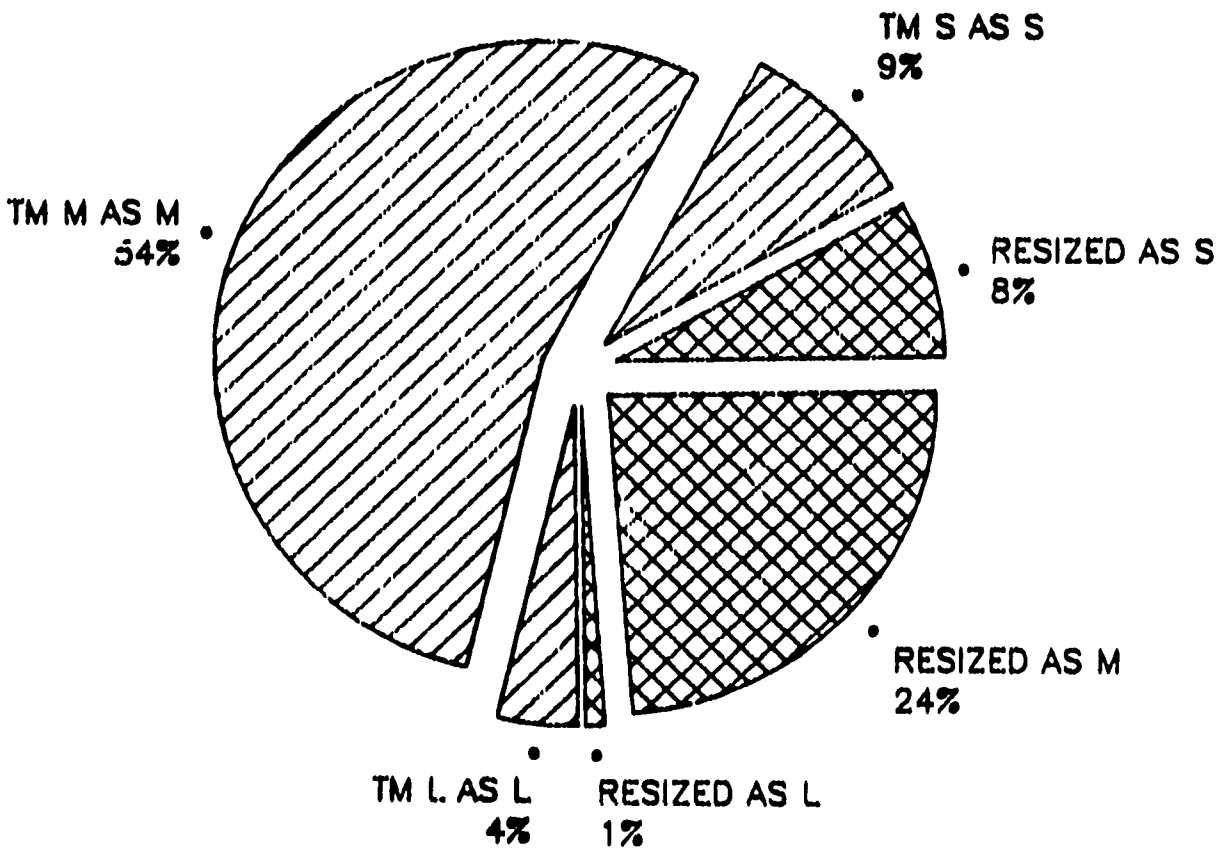
METHOD 12

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



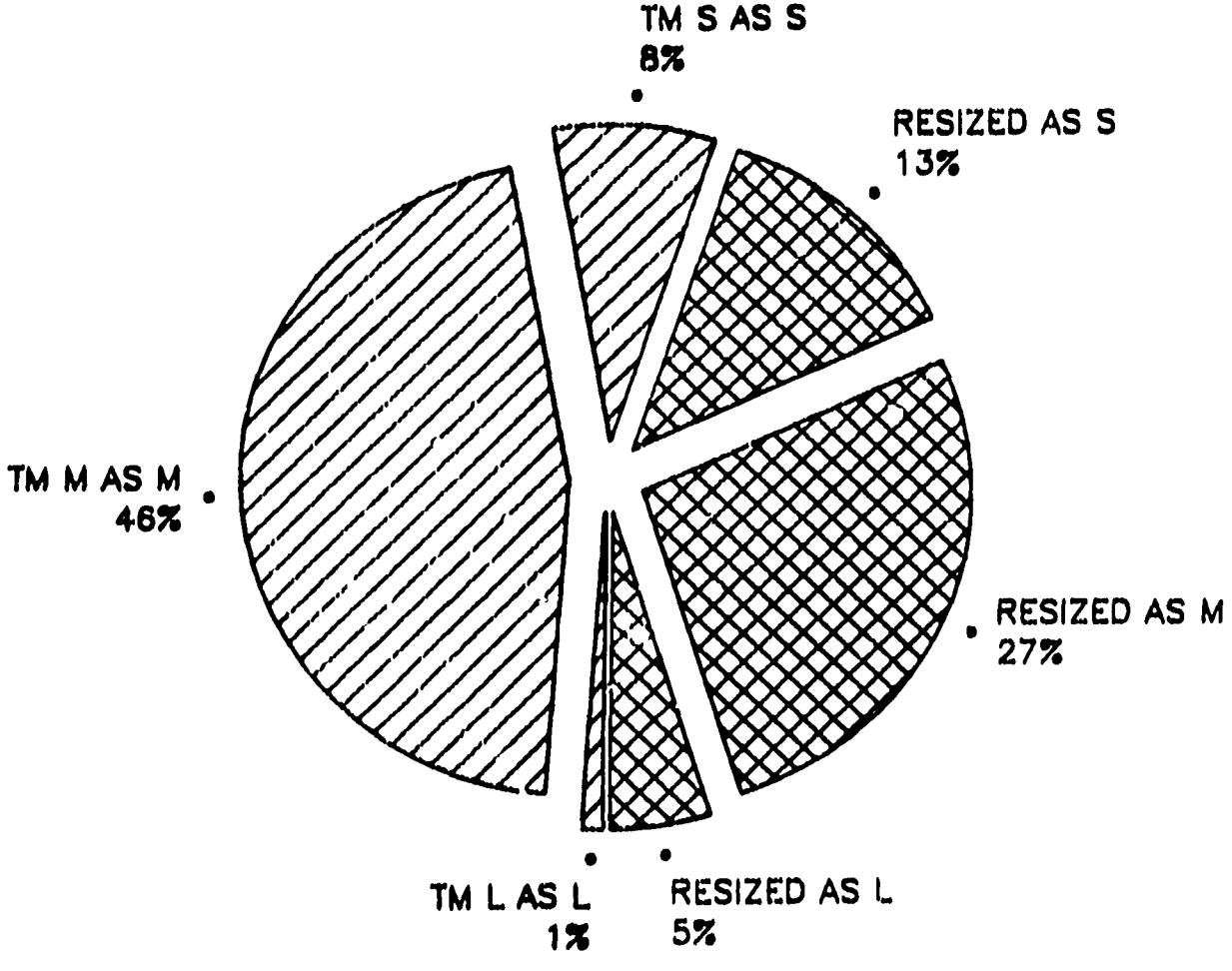
METHOD 13

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



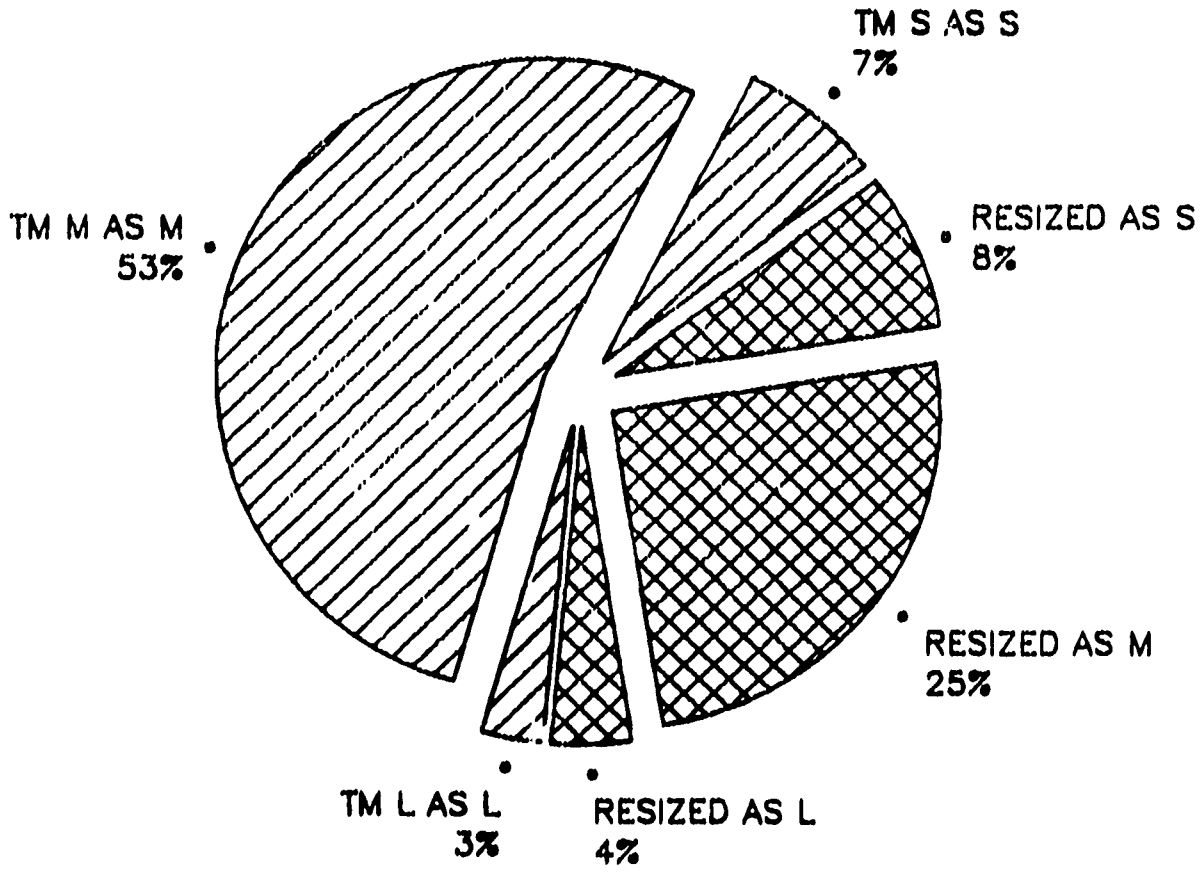
METHOD 14

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



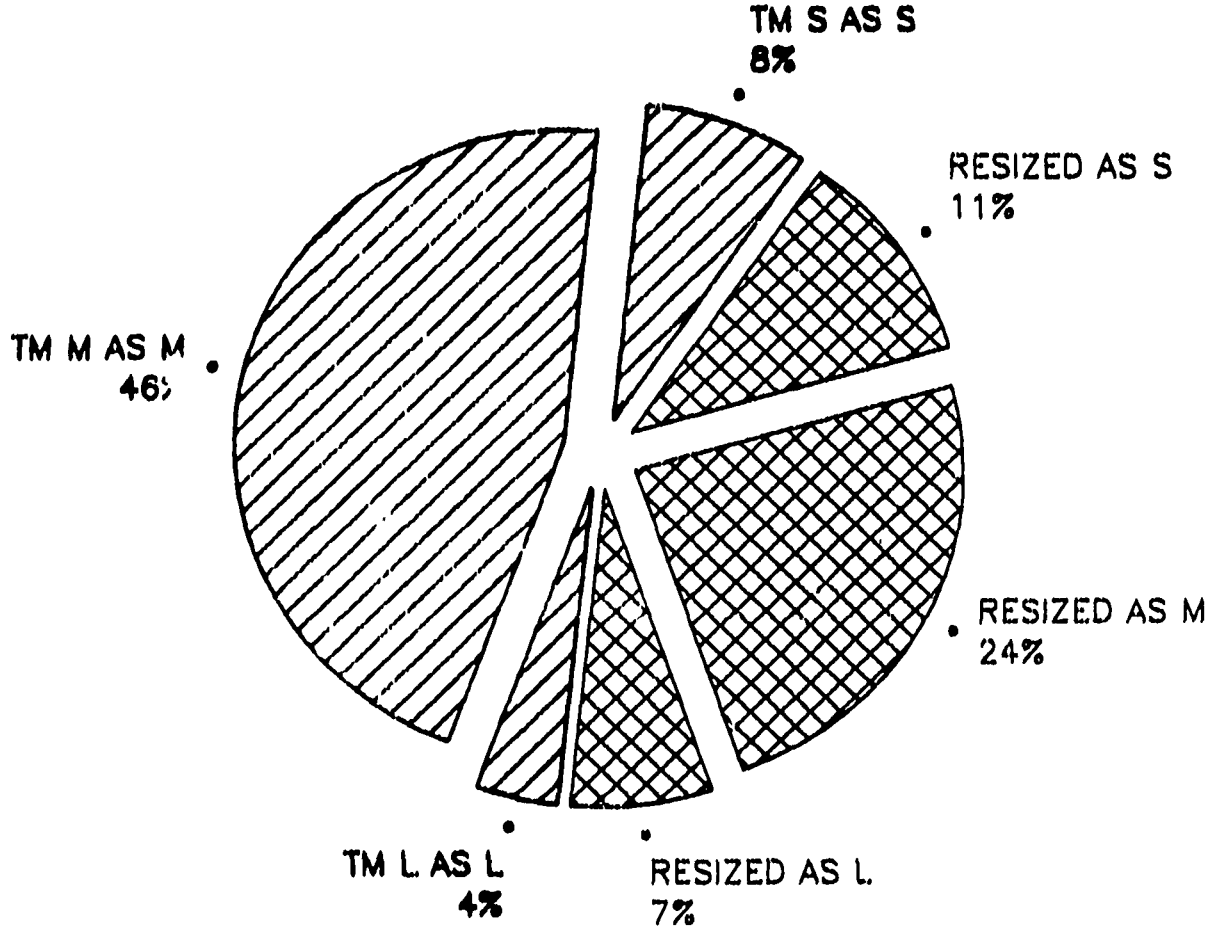
METHOD 15

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



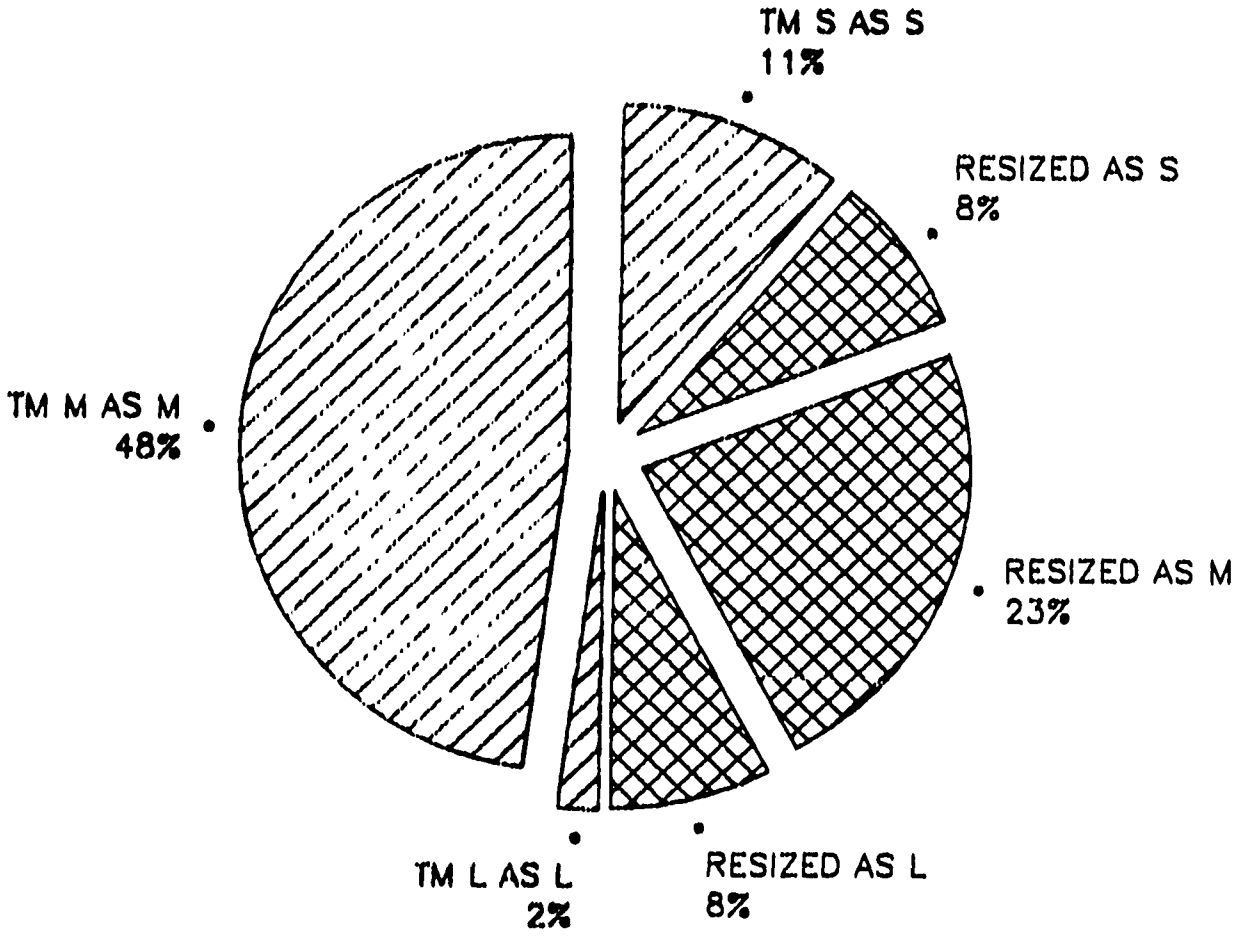
METHOD 16

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



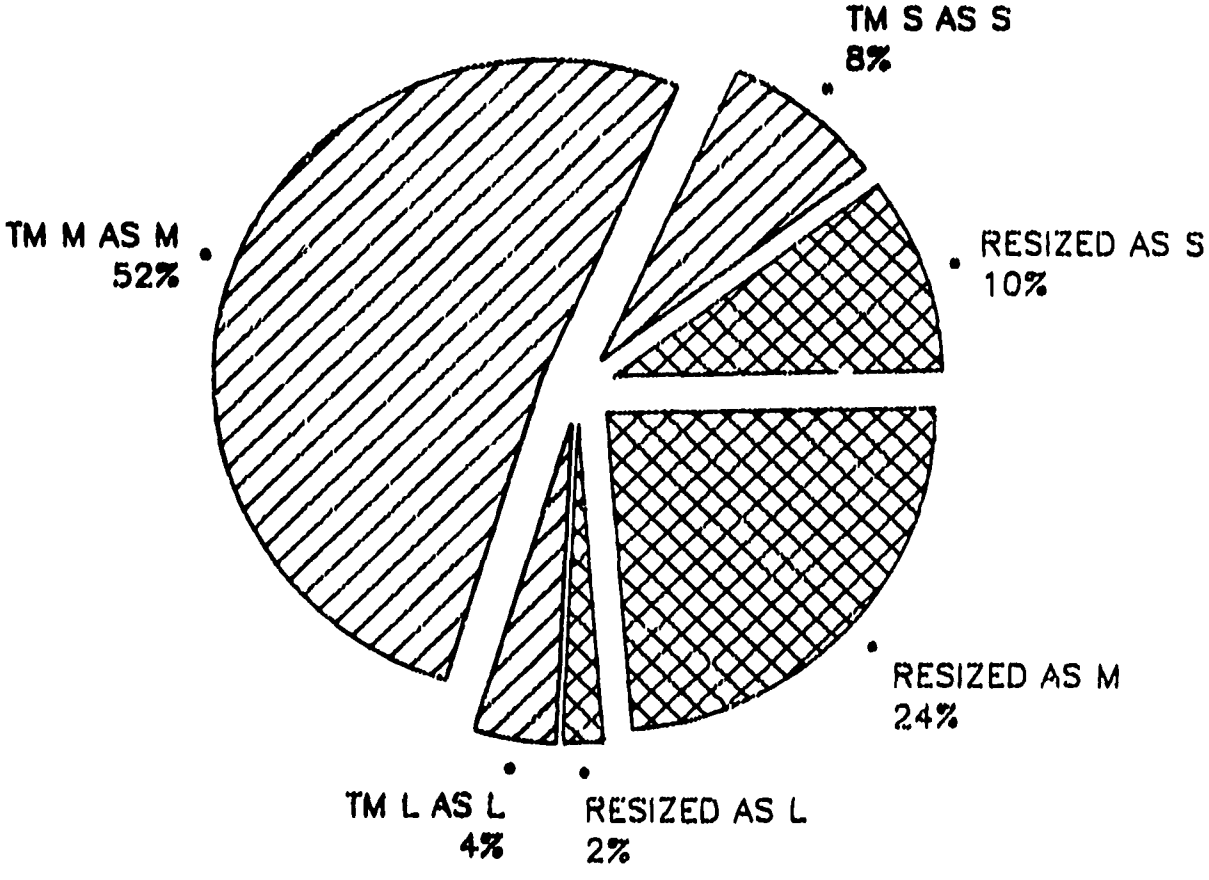
METHOD 5+6

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



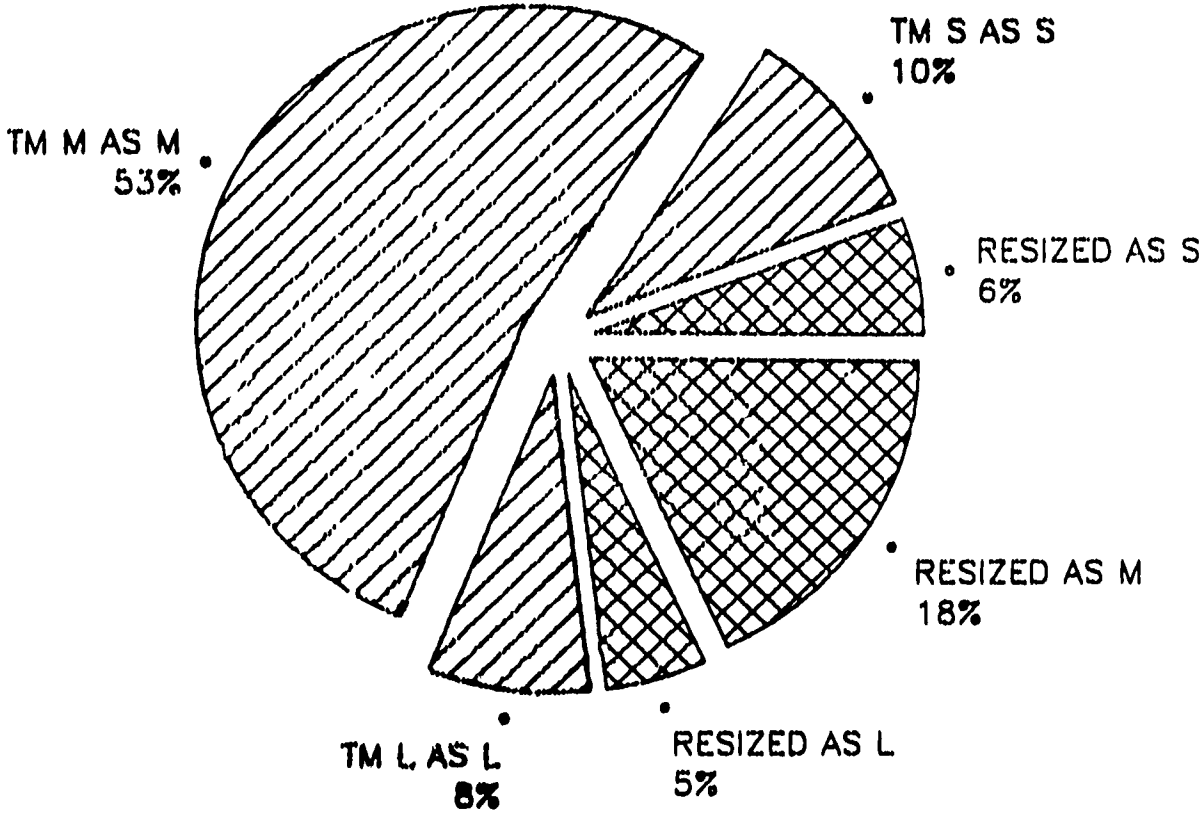
METHOD 9+10

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS



METHOD 12+1/2(6)

SIZE DETERMINATION
SCOTT XM40 SIZE LINE ANALYSIS

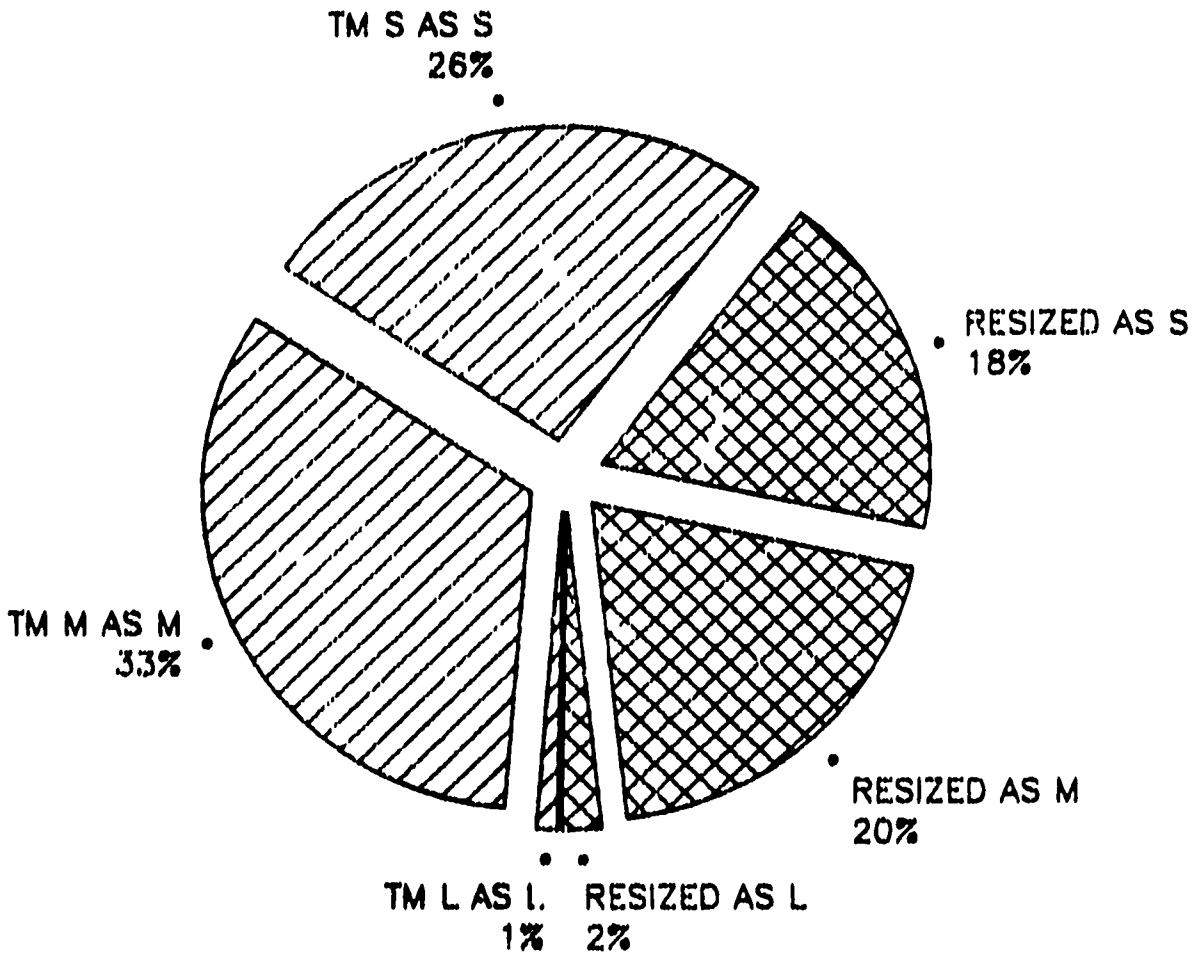


METHOD 14+16

APPENDIX J2

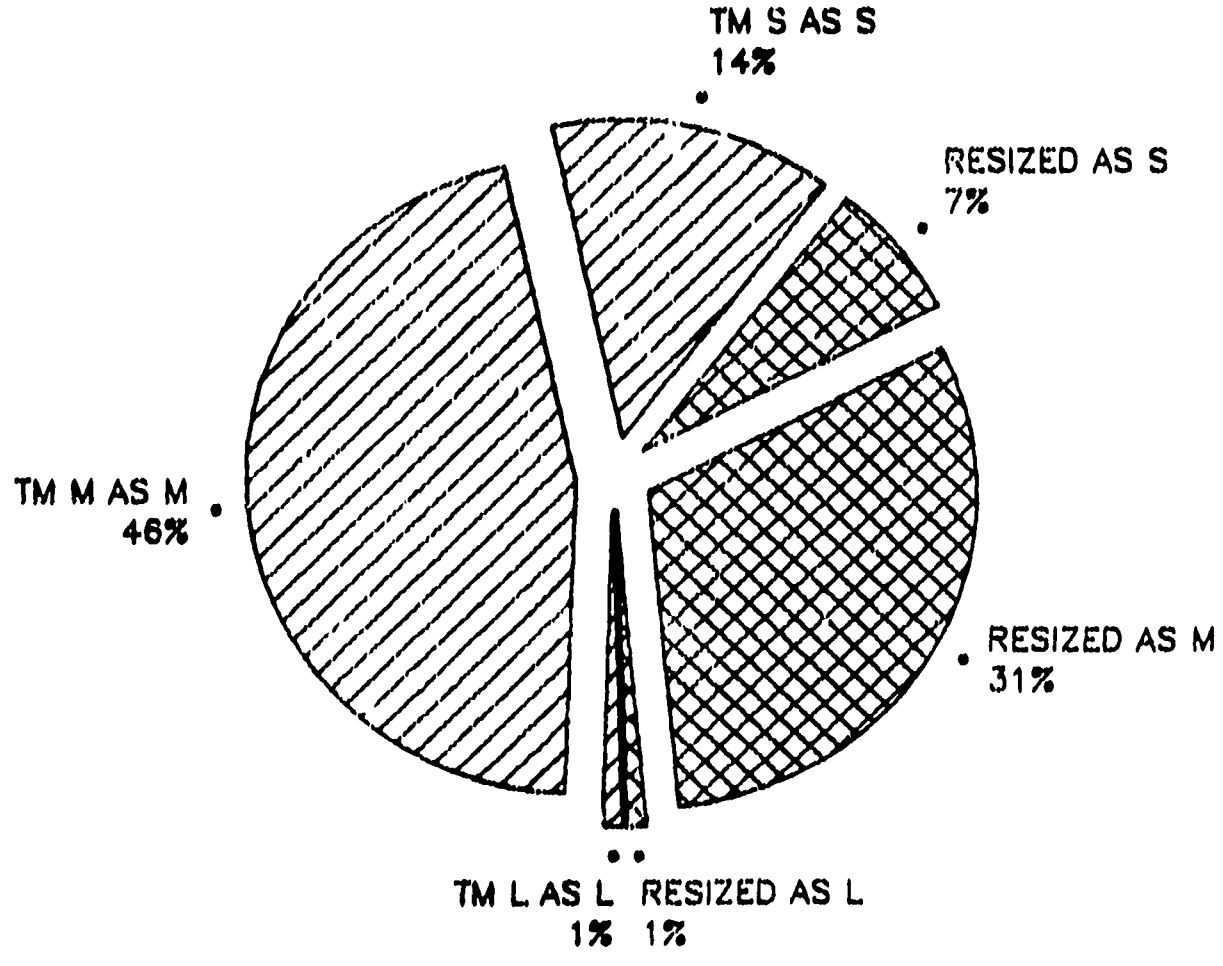
ILC X440 Size Line Analysis Results

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



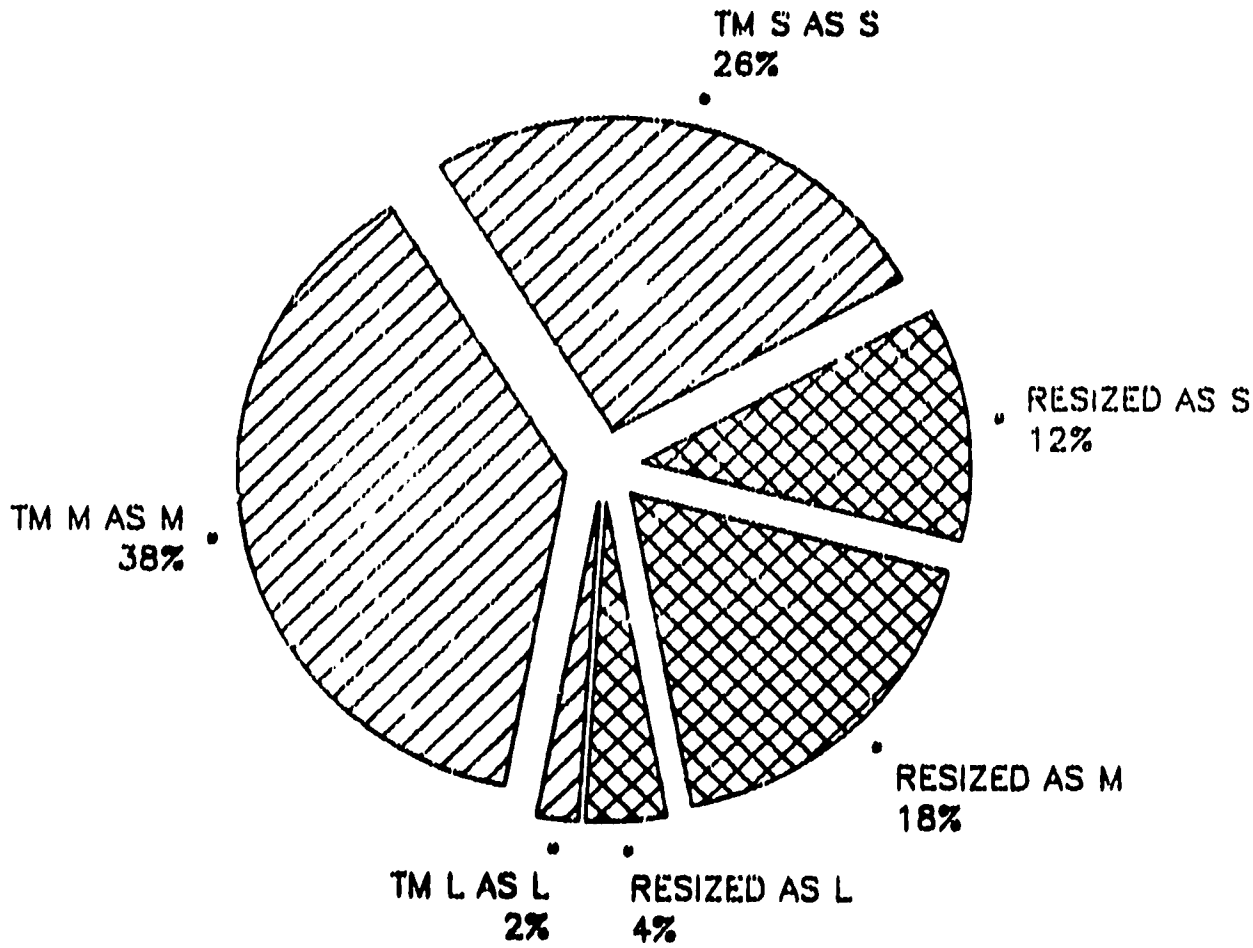
METHOD 3

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



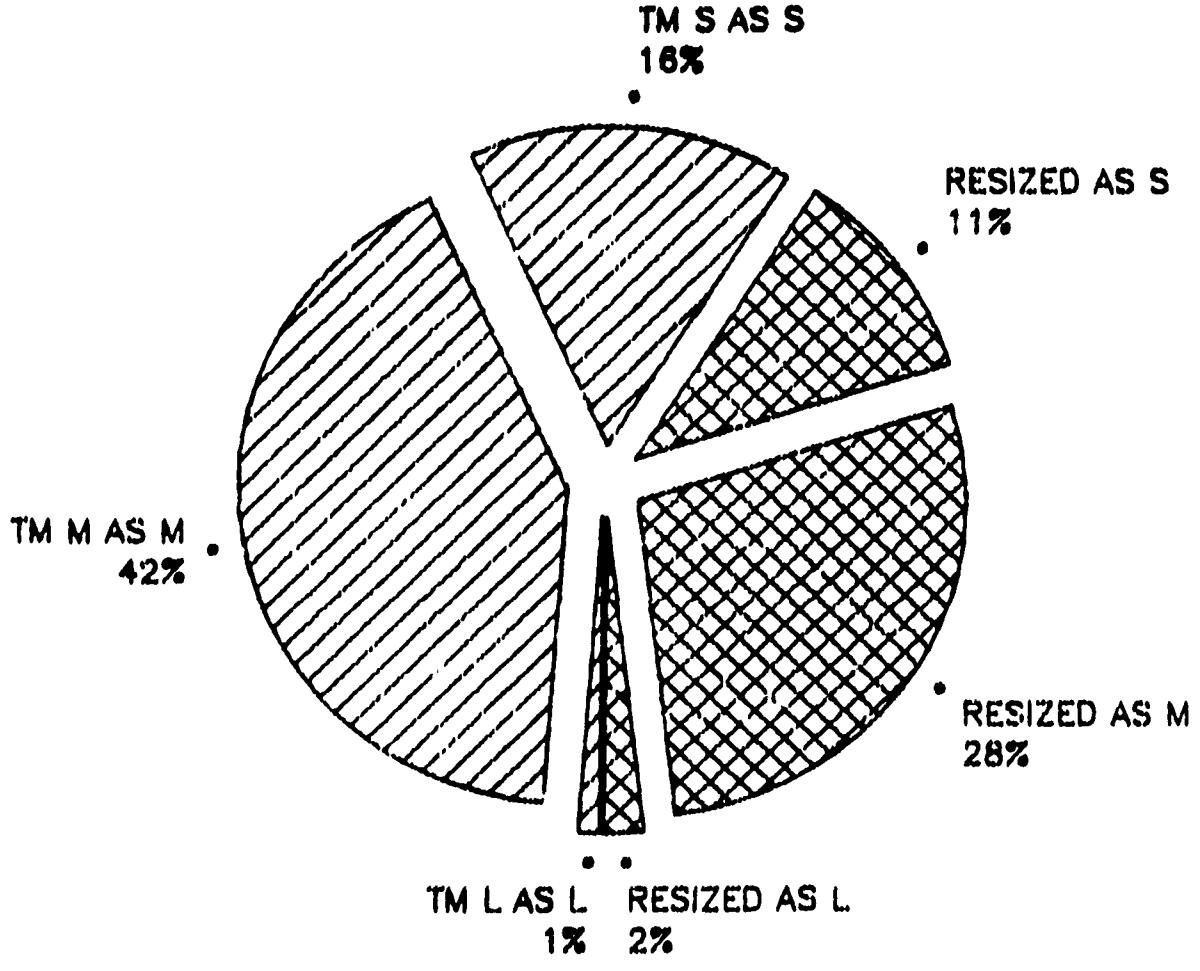
METHOD 5

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



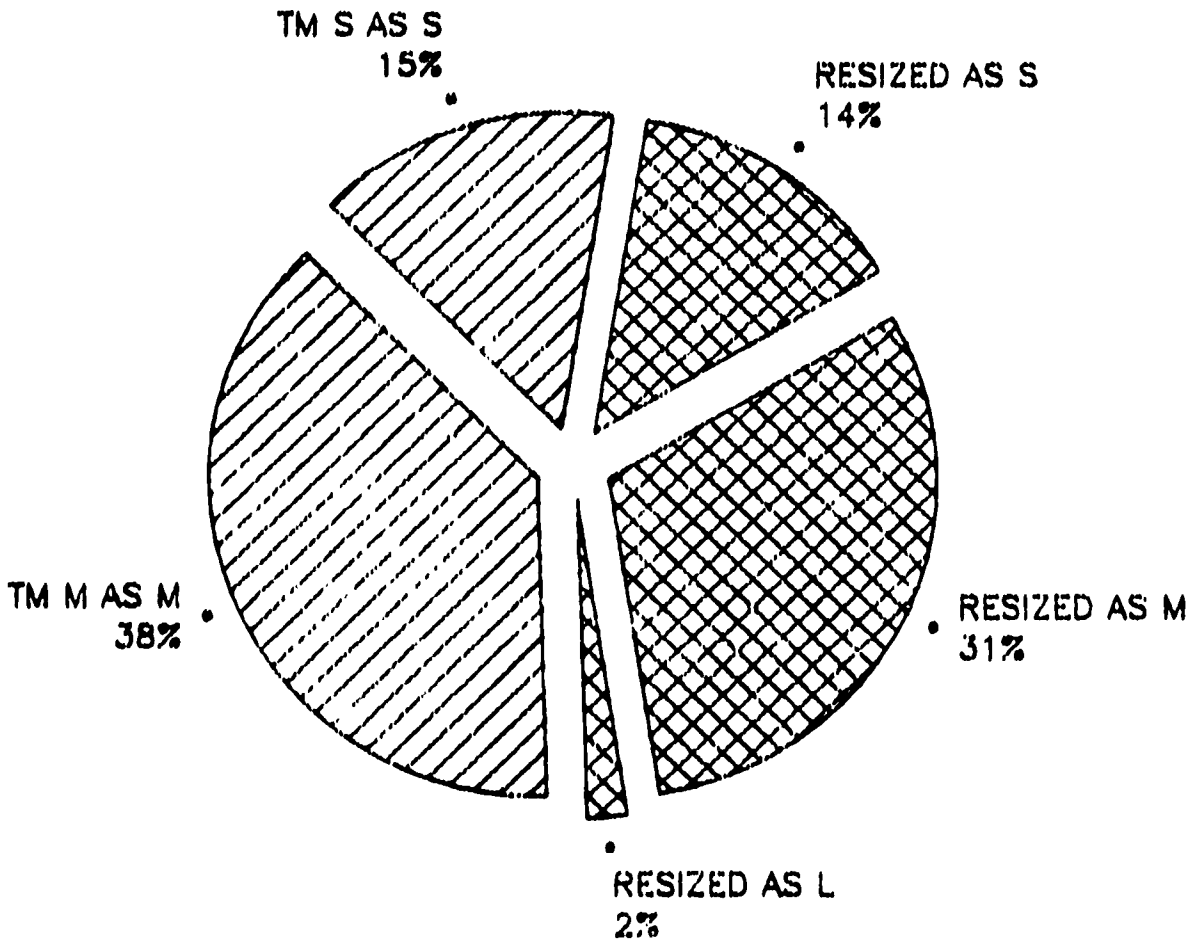
METHOD 6

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



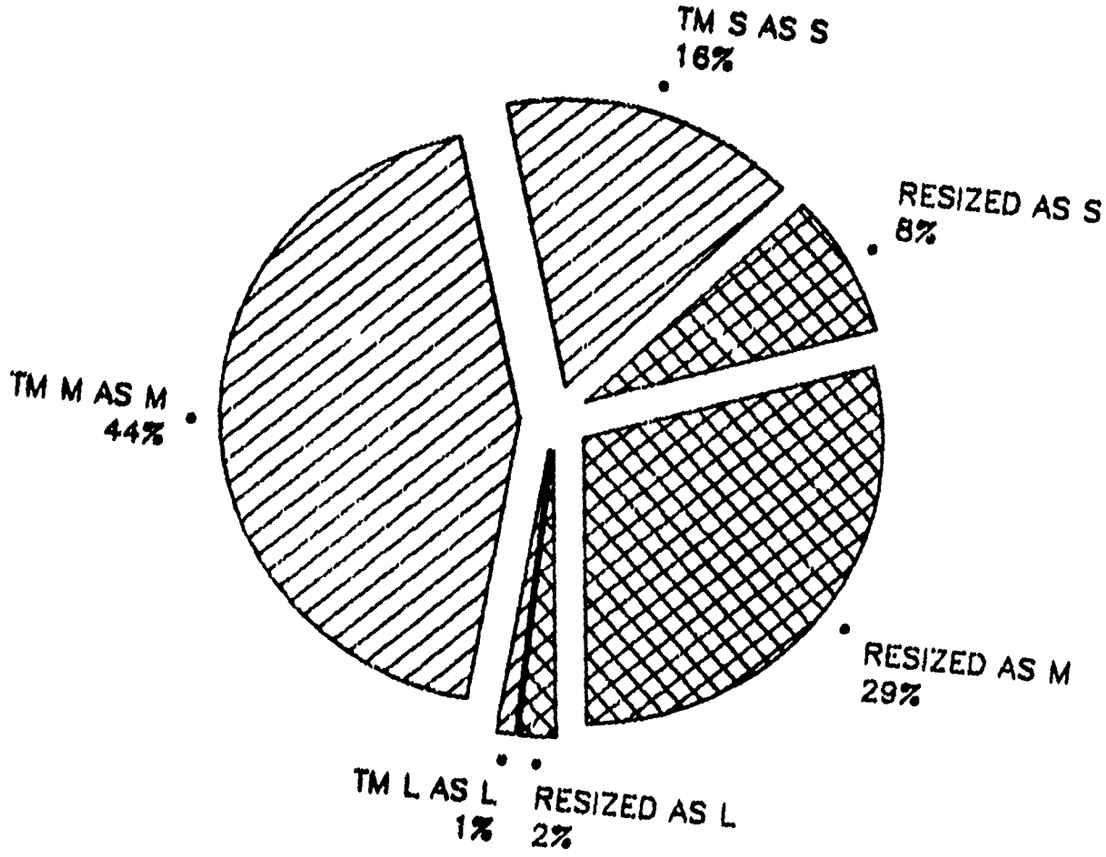
METHOD 7

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



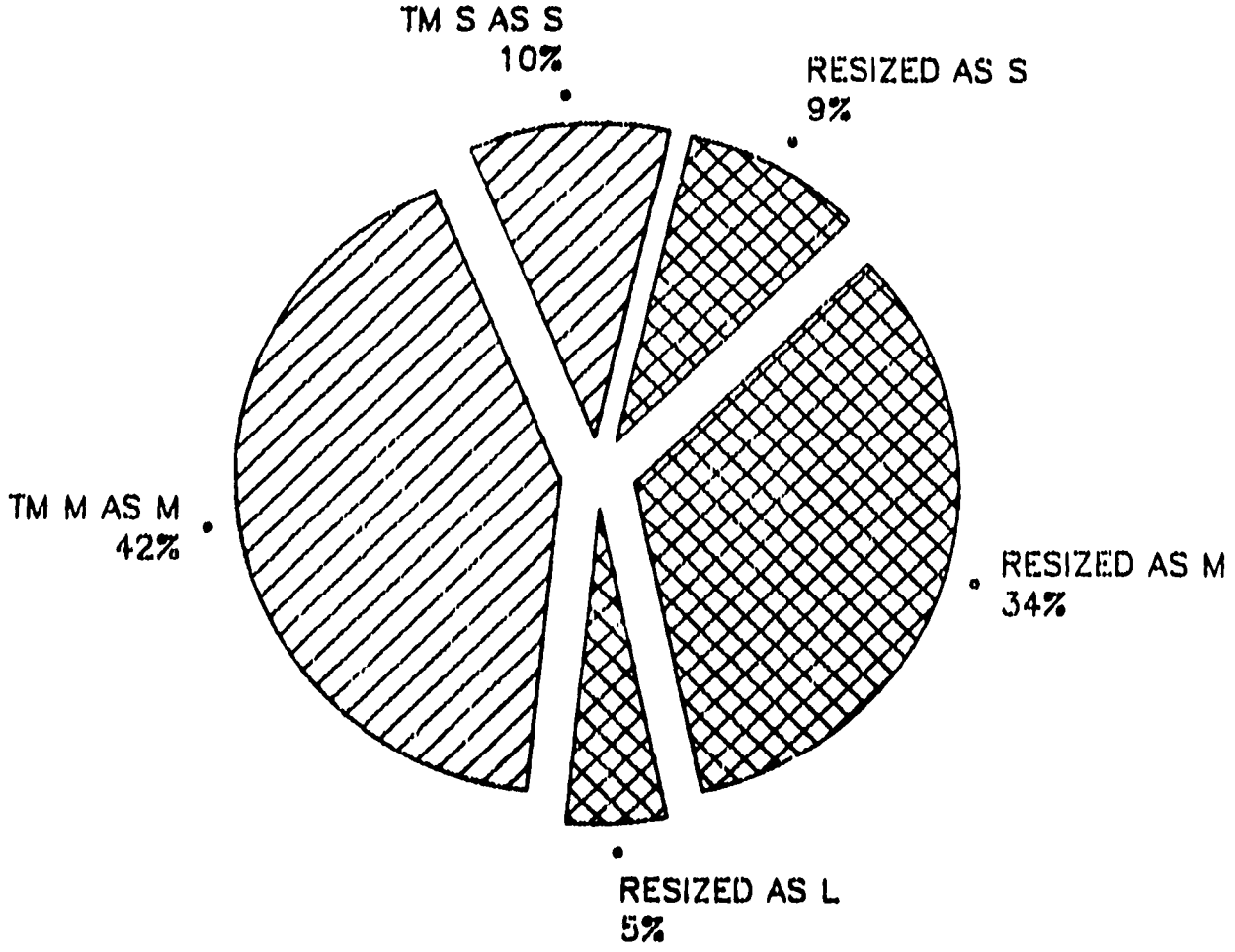
METHOD 8

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



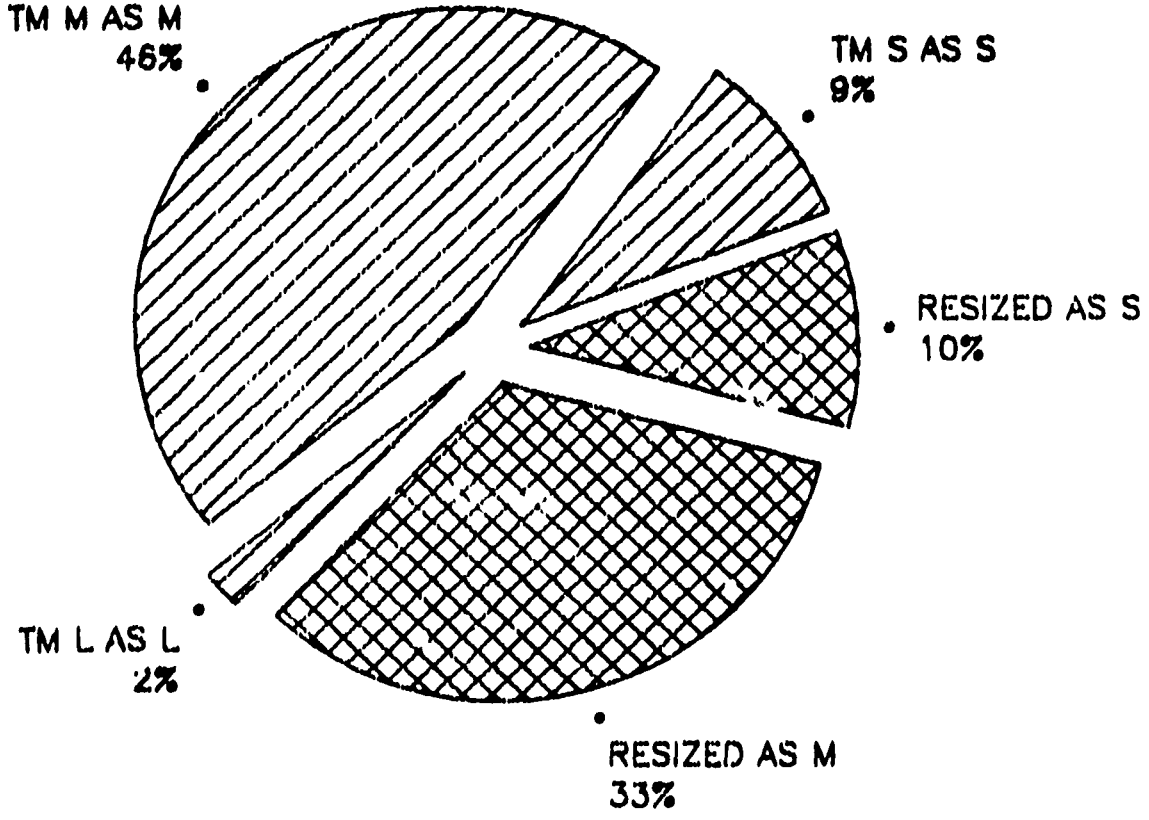
METHOD 9

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



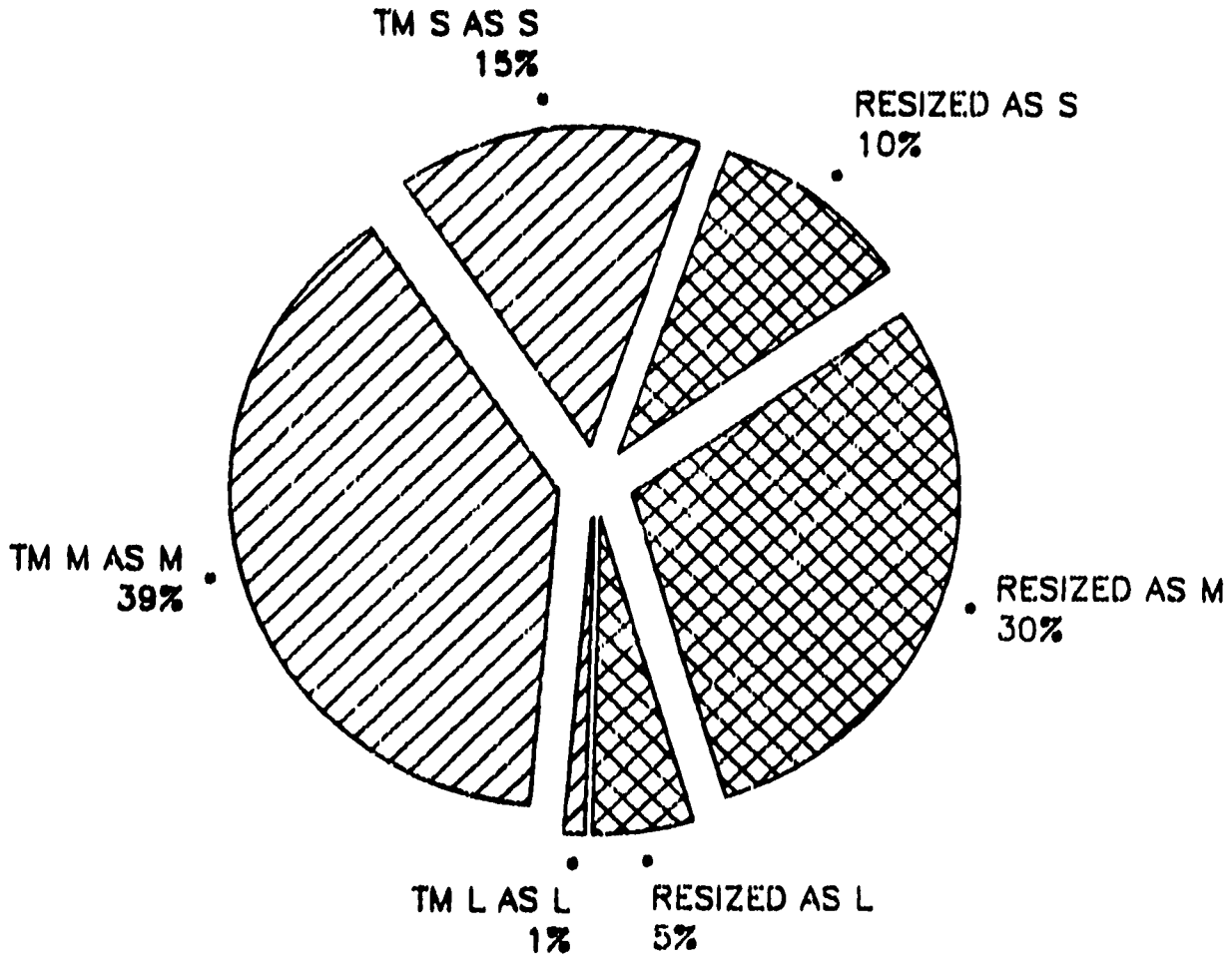
METHOD 10

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



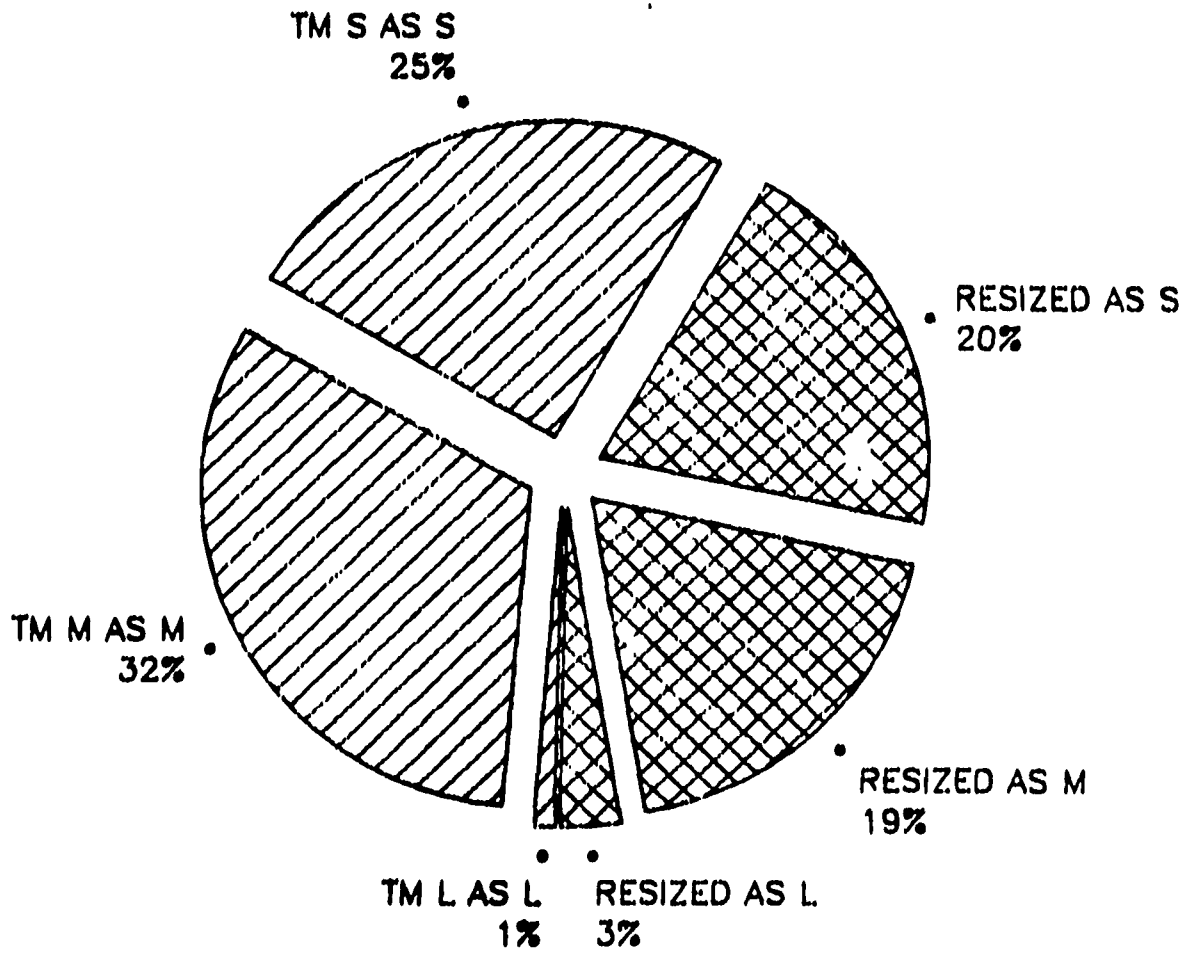
METHOD 11

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



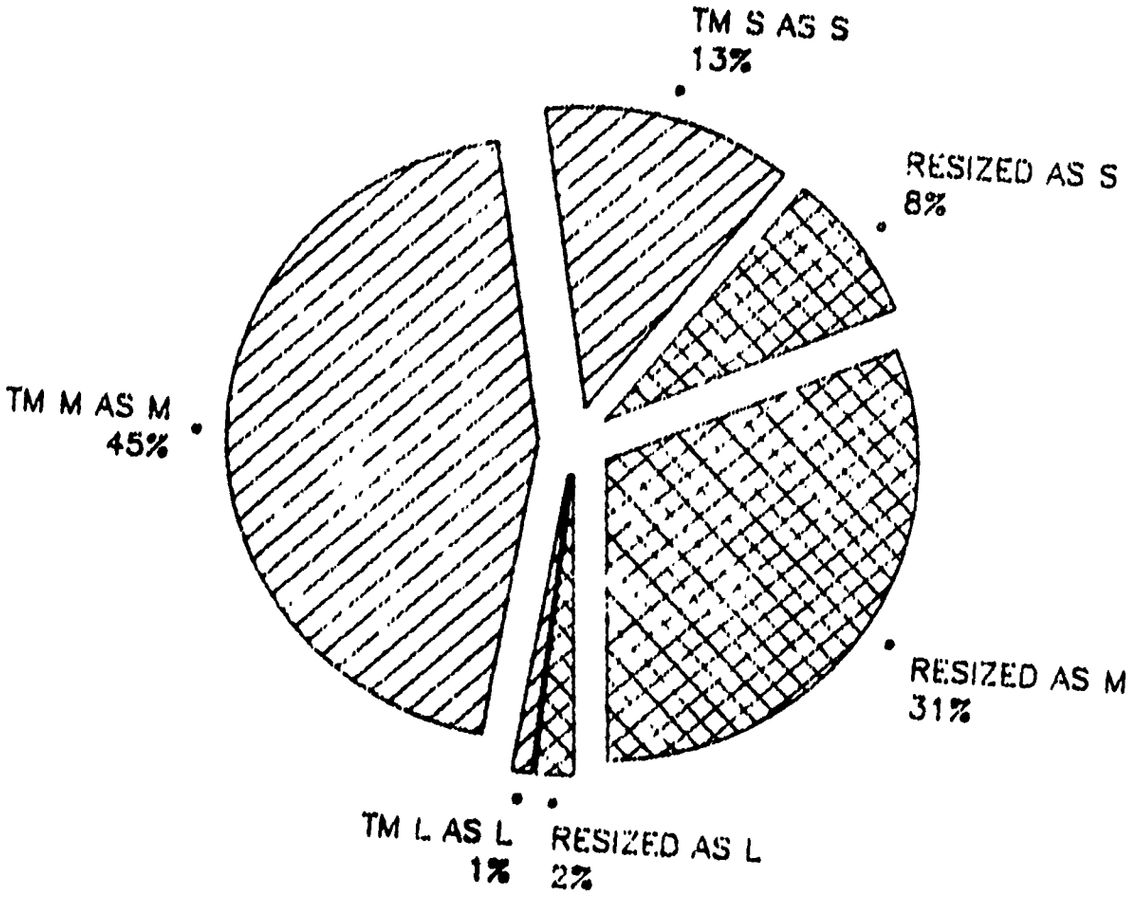
METHOD 12

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



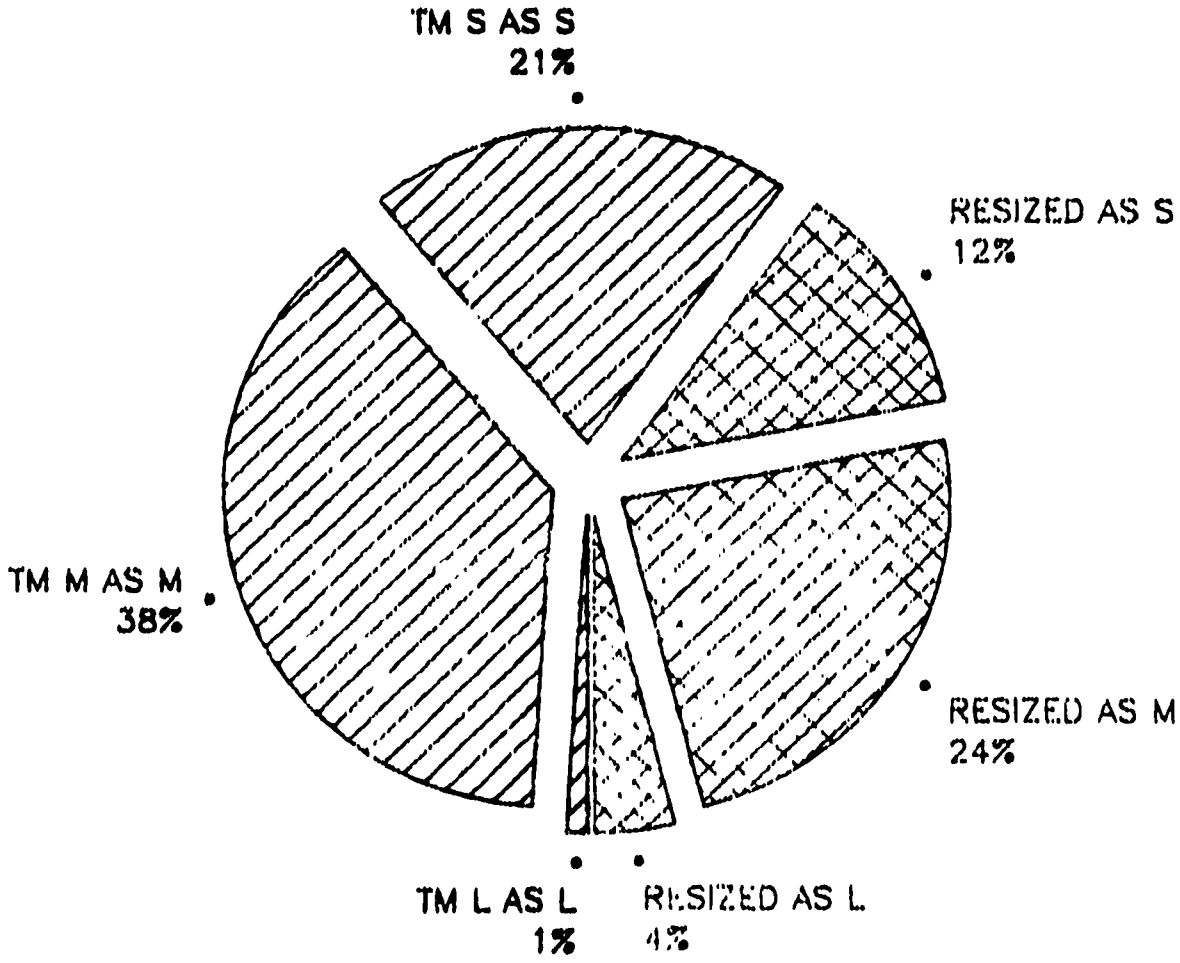
METHOD 13

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



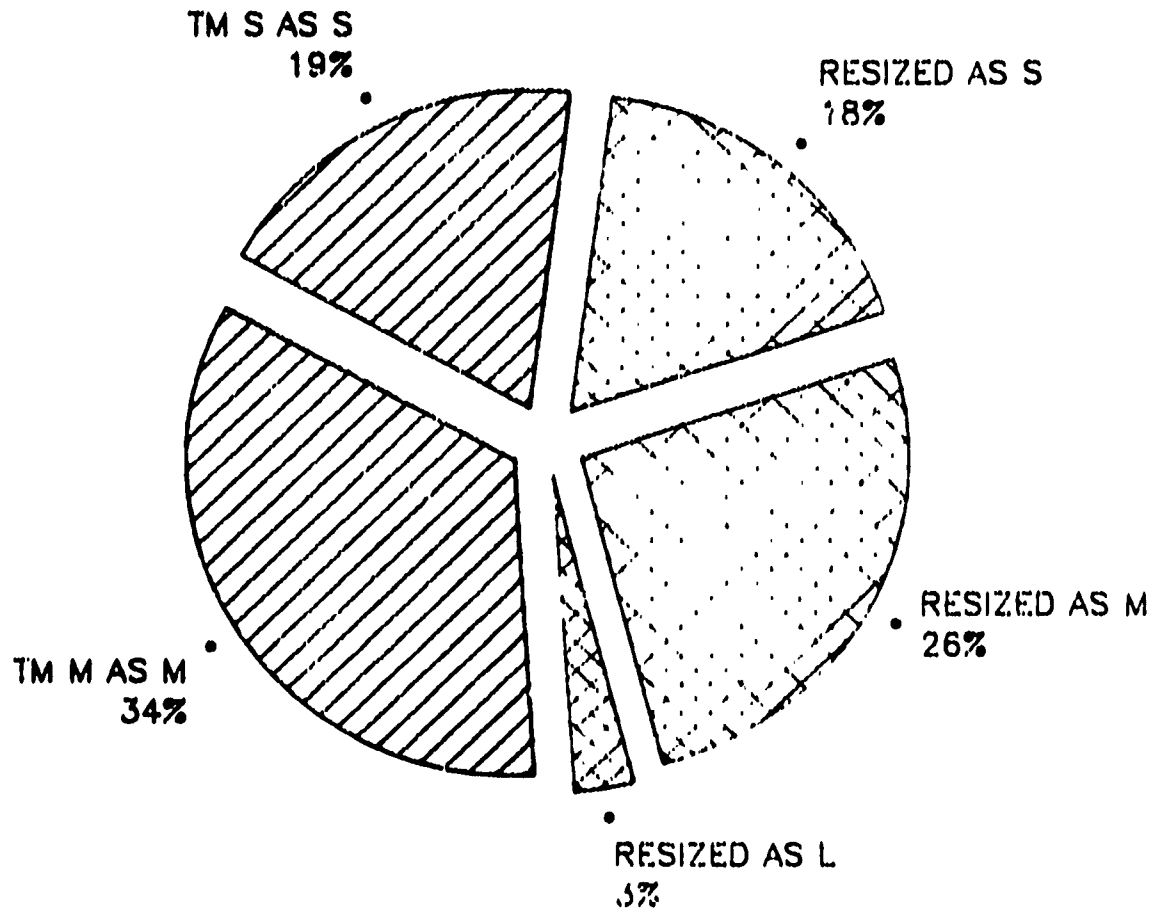
METHOD 14

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



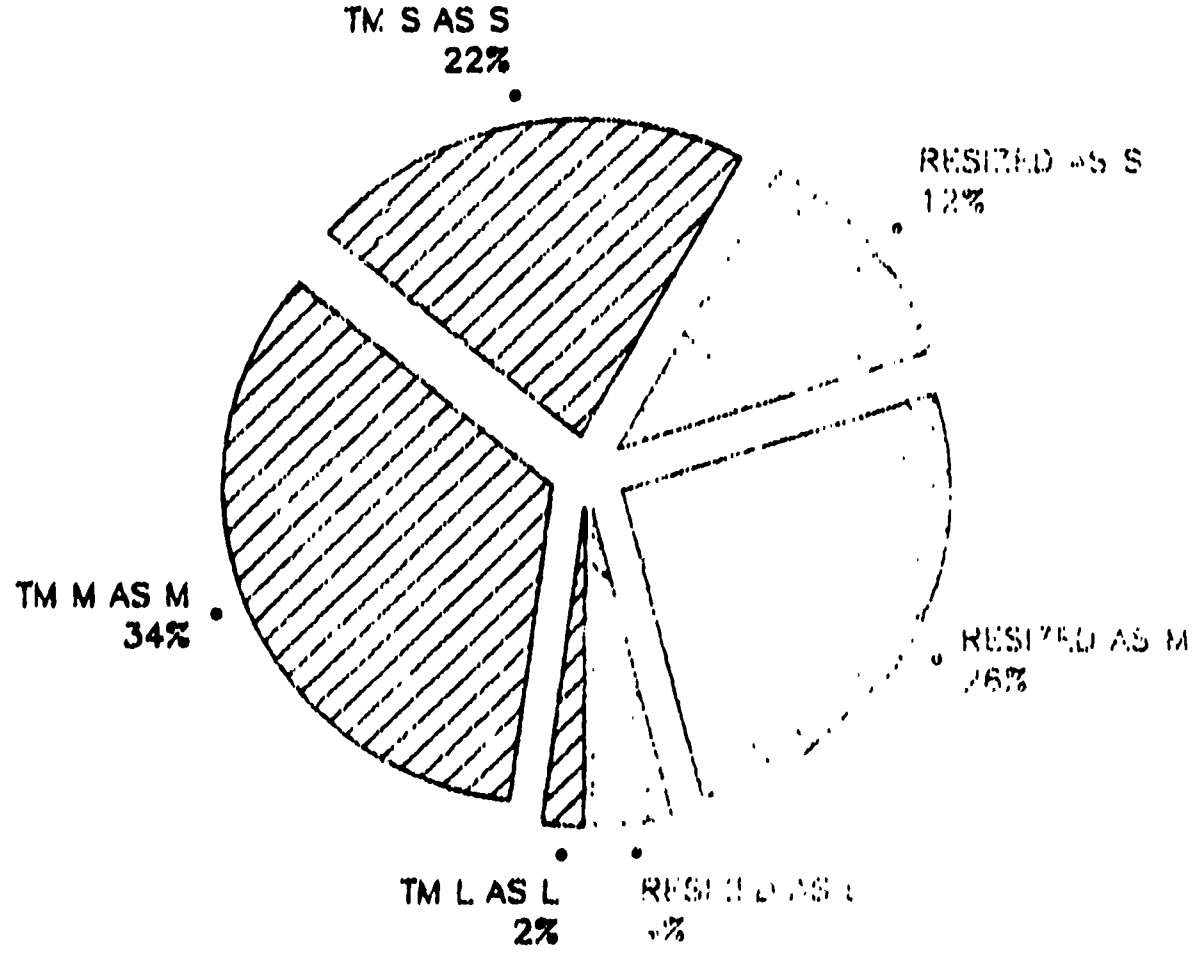
METHOD 15

SIZE DETERMINATION
IL.C XM40 SIZE LINE ANALYSIS



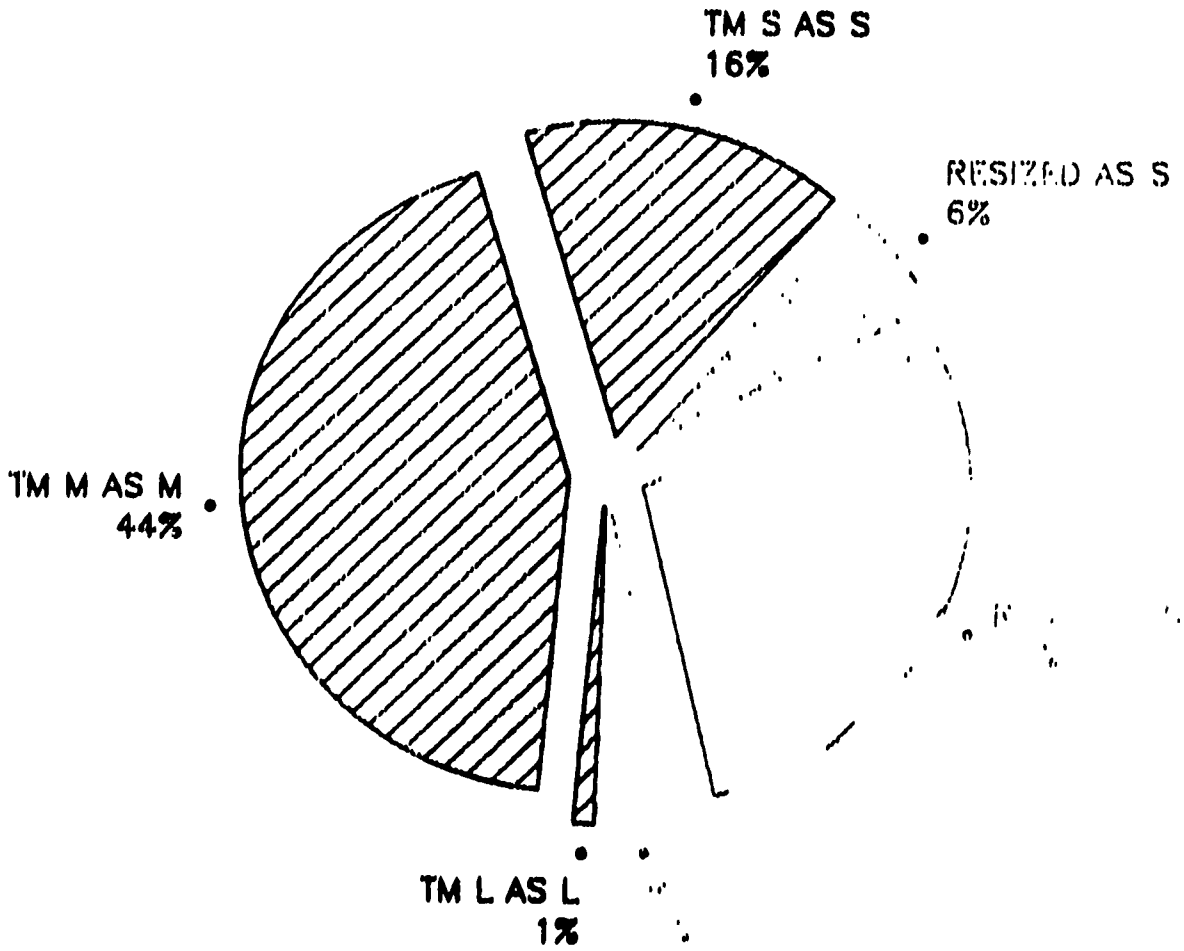
METHOD 16

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



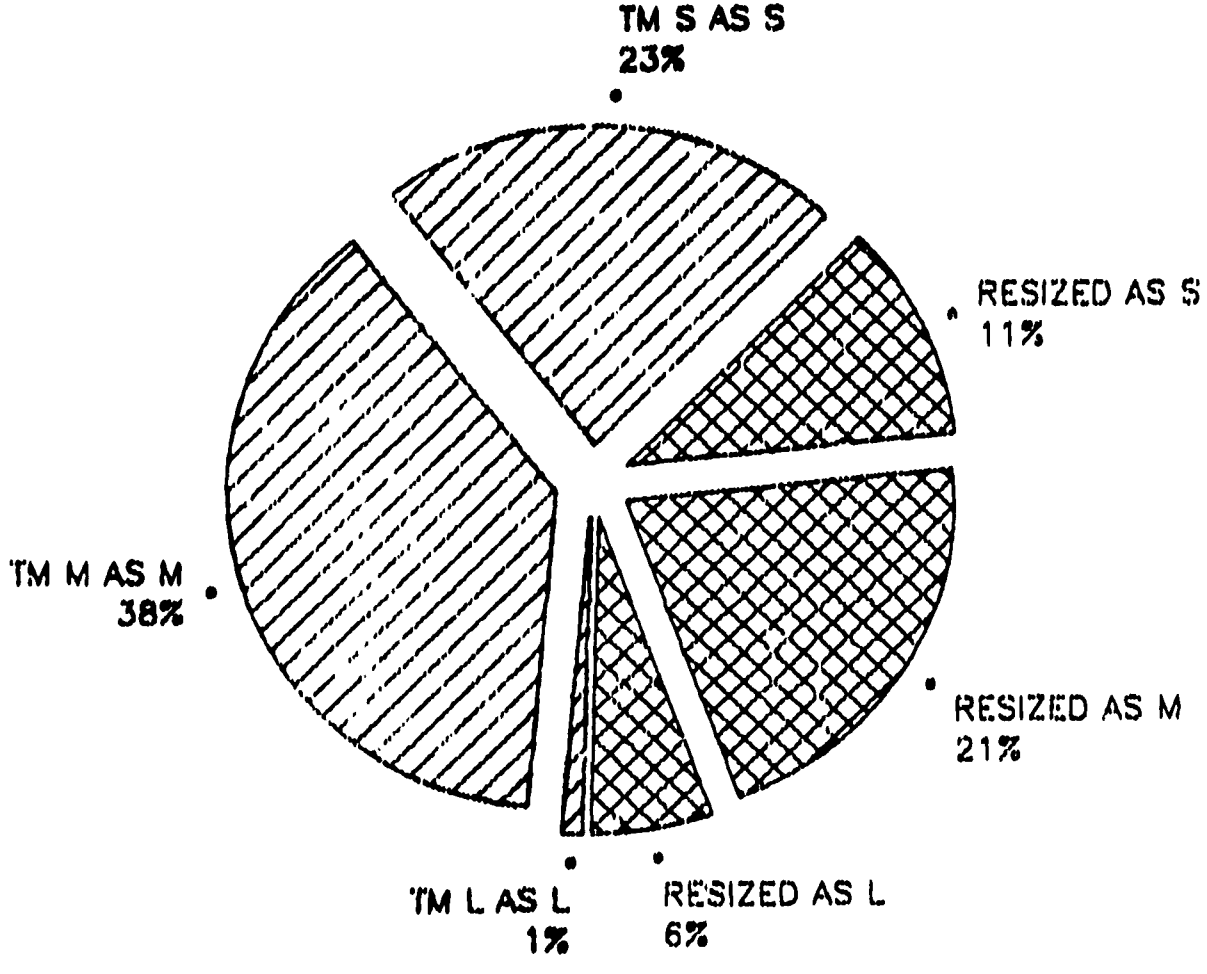
METHOD 5+6

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



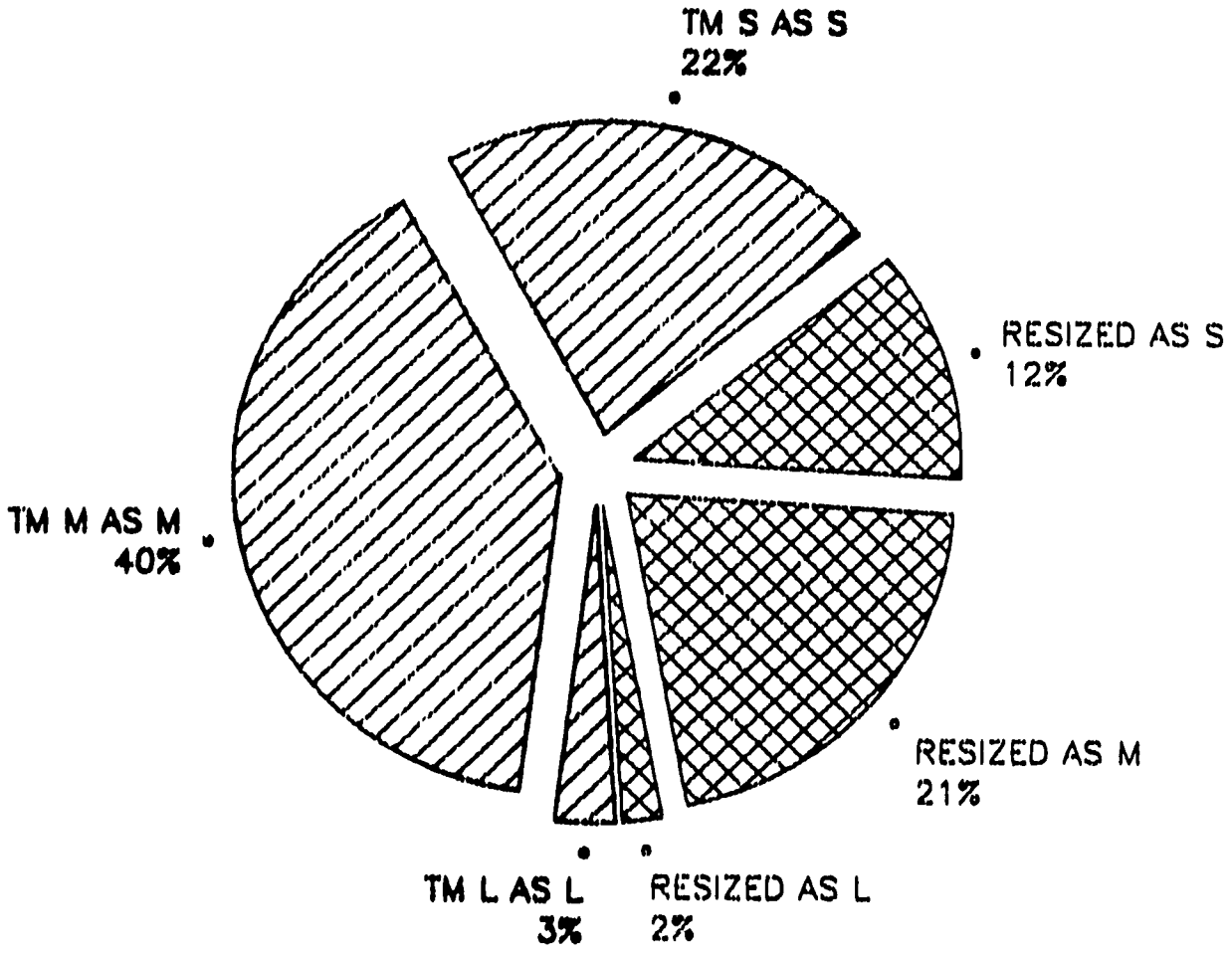
METHOD 9+10

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS



METHOD 12+1/2(6)

SIZE DETERMINATION
ILC XM40 SIZE LINE ANALYSIS

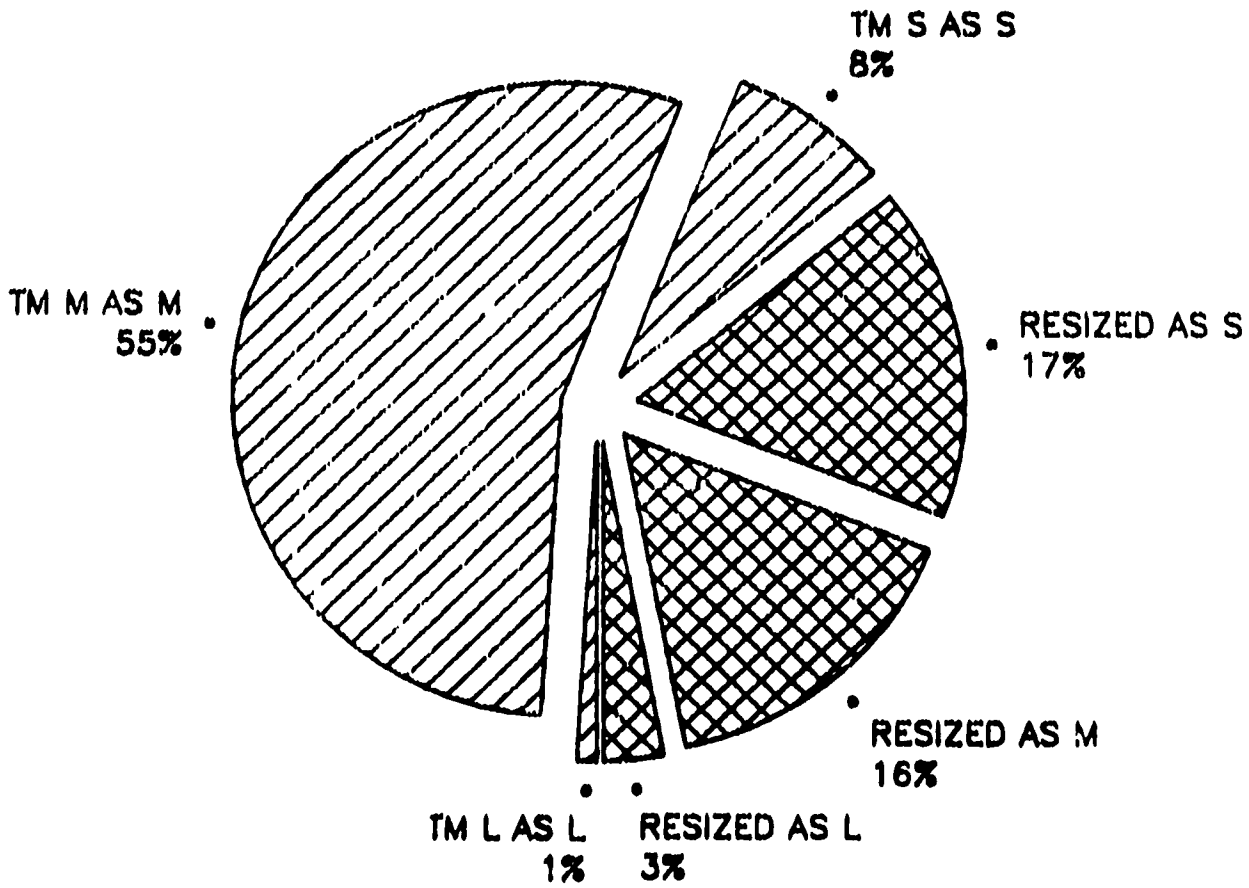


METHOD 14+16

APPENDIX J3

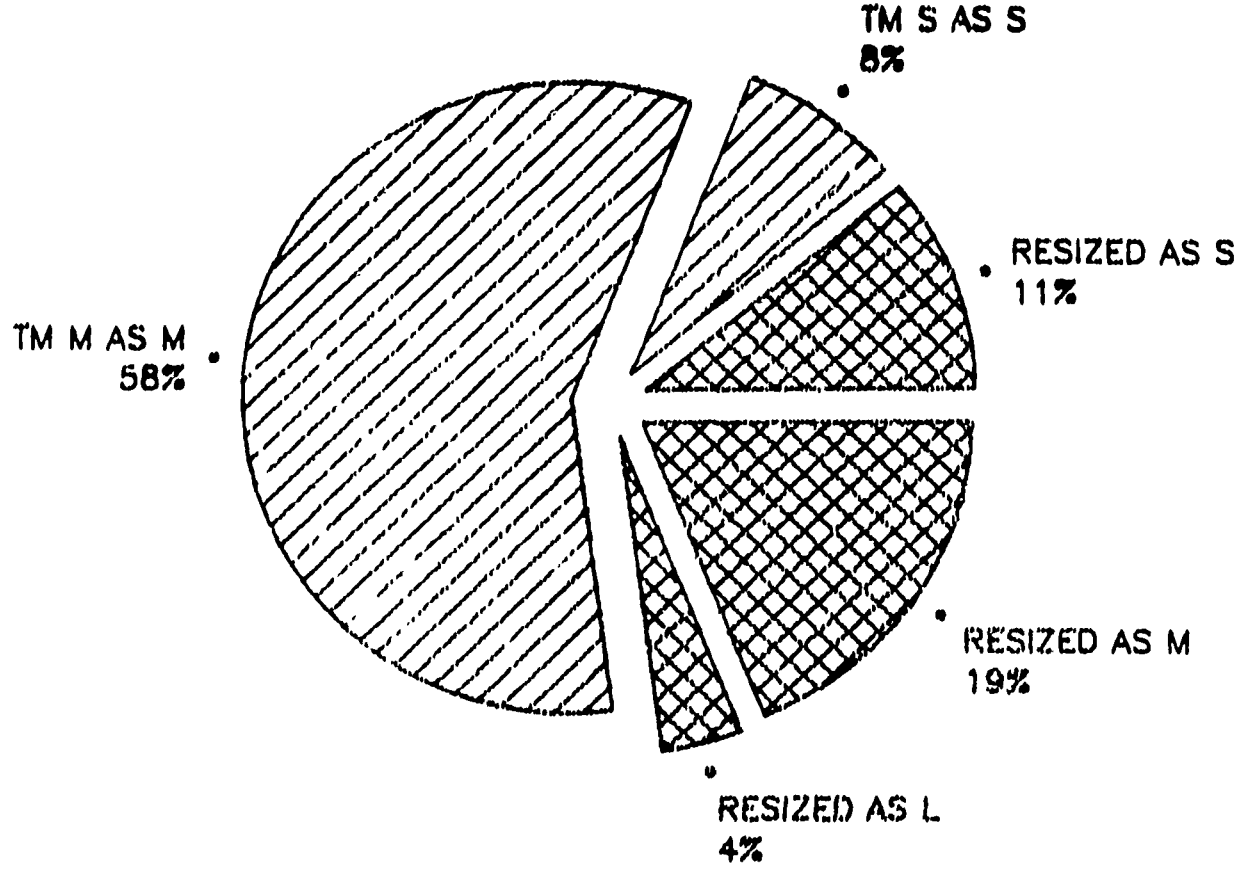
US-10 Size Line Analysis Results

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



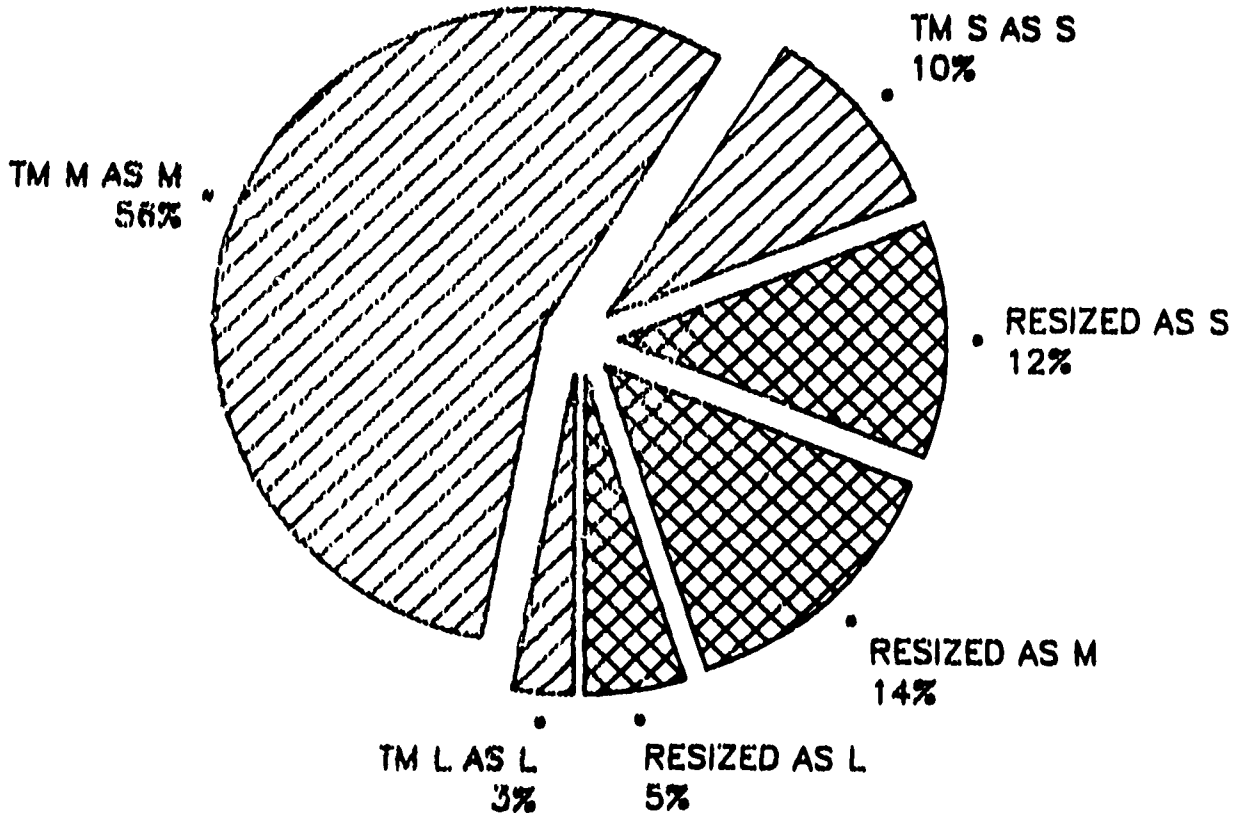
METHOD 3

SIZE DETERMINATION
US--10 SIZE LINE ANALYSIS



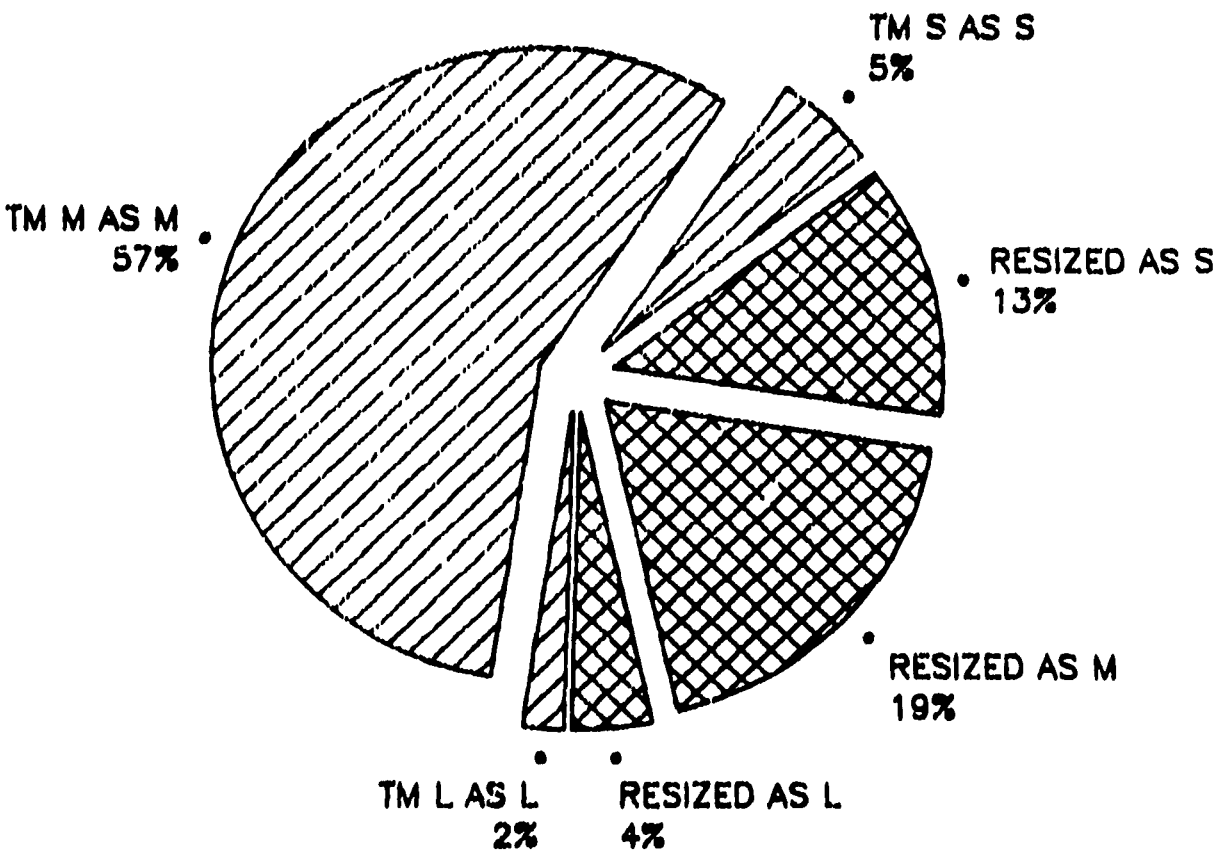
METHOD 5

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



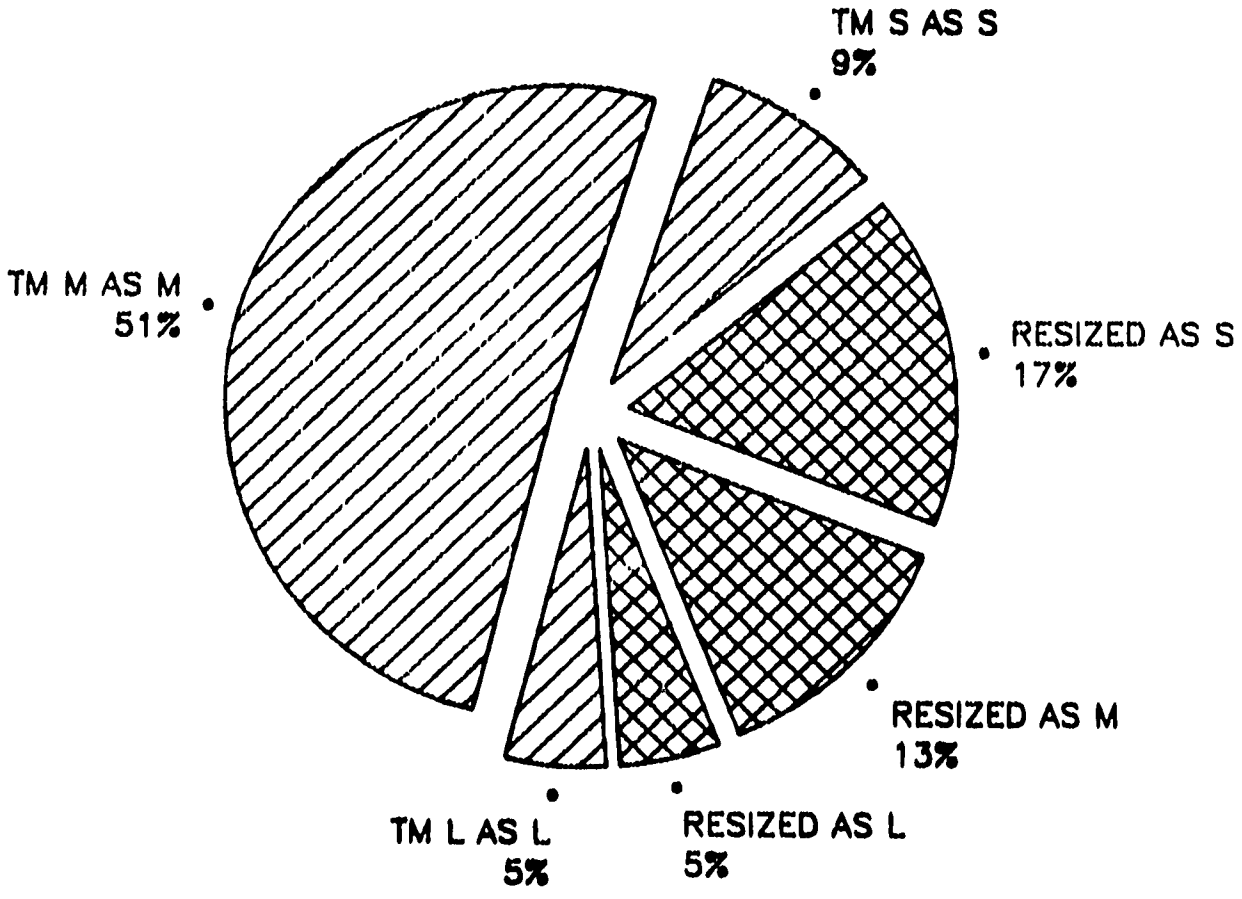
METHOD 6

SIZE DETERMINATION
US--10 SIZE LINE ANALYSIS



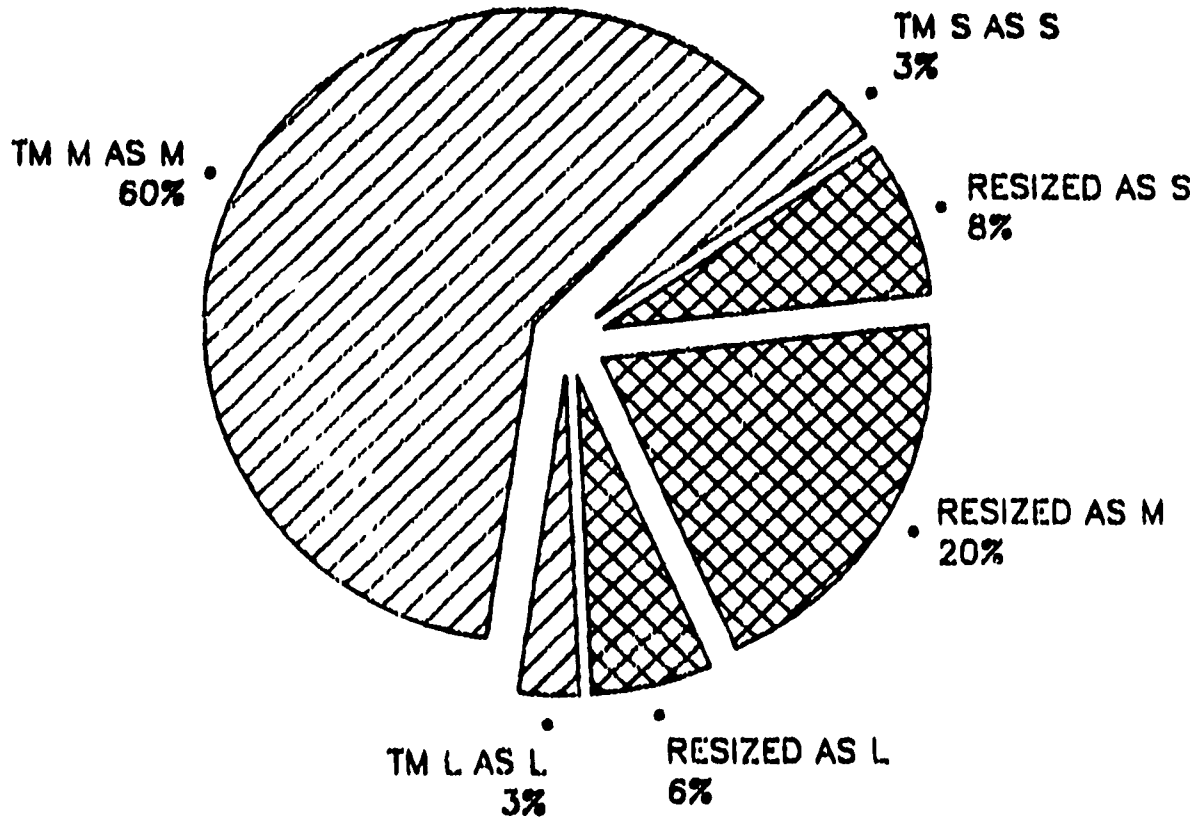
METHOD 7

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



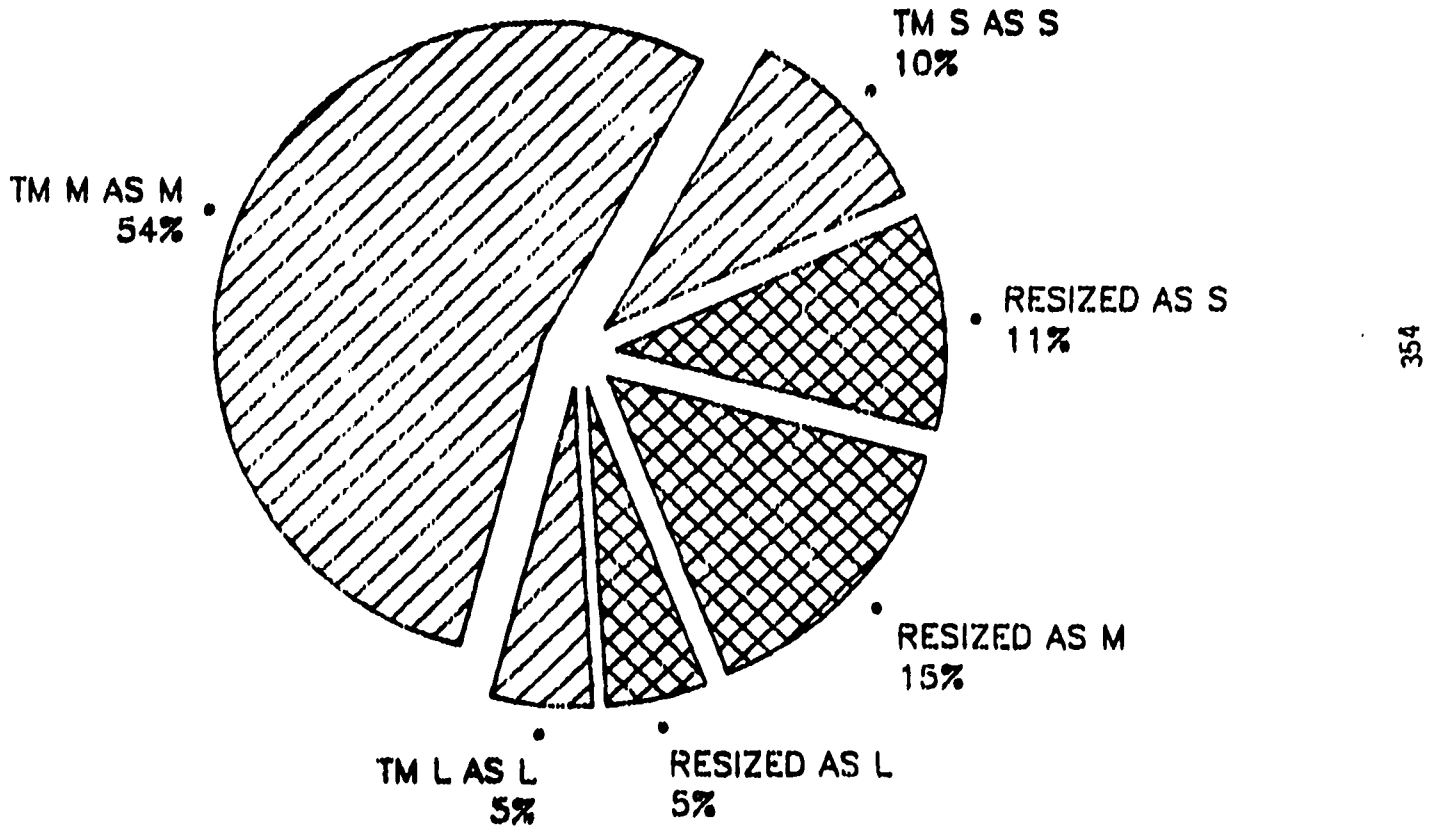
METHOD 8

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



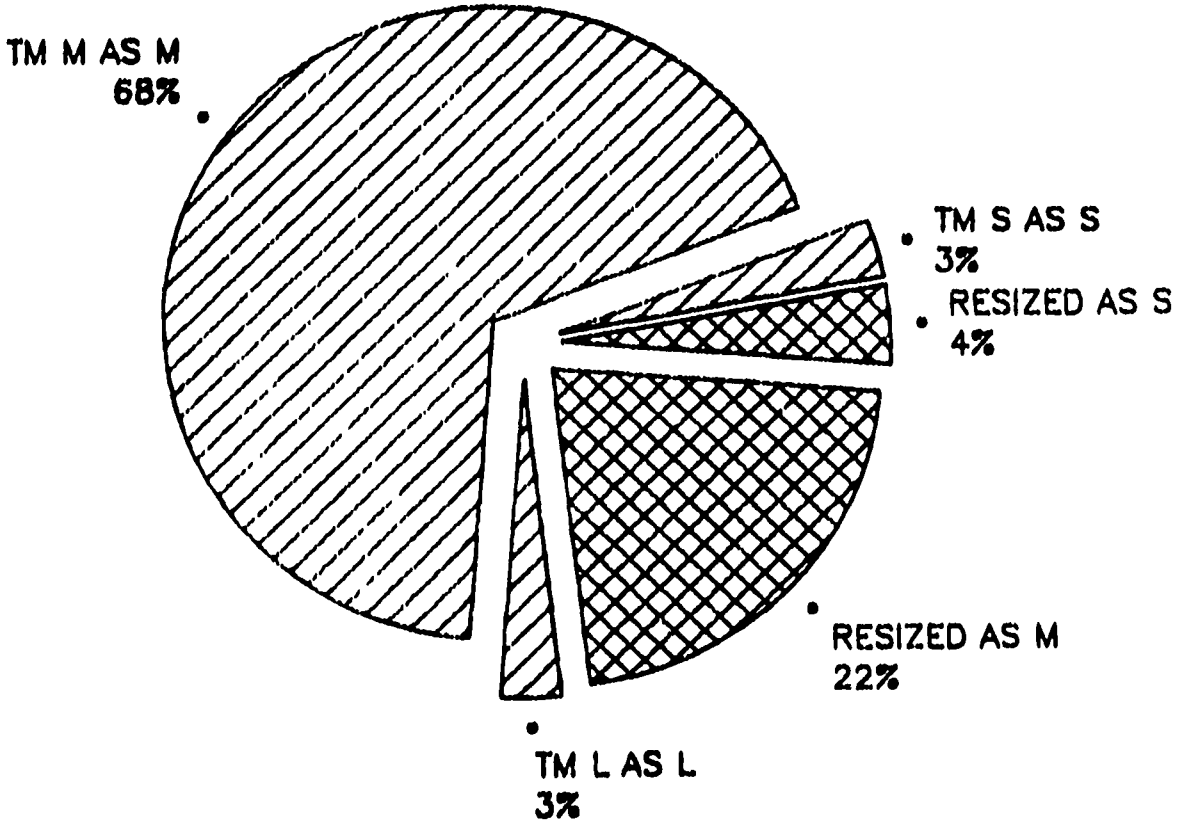
METHOD 9

SIZE DETERMINATION
US--10 SIZE LINE ANALYSIS



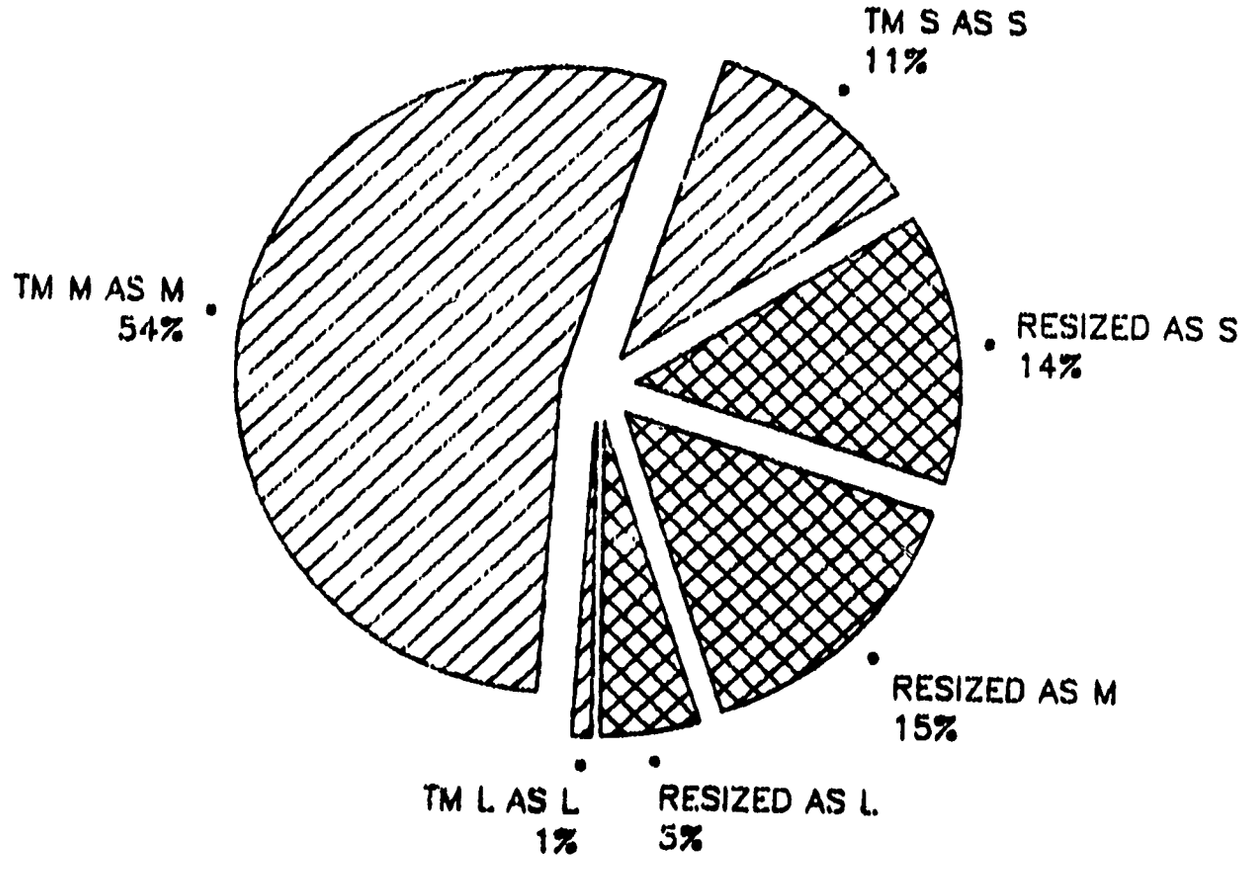
METHOD 10

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



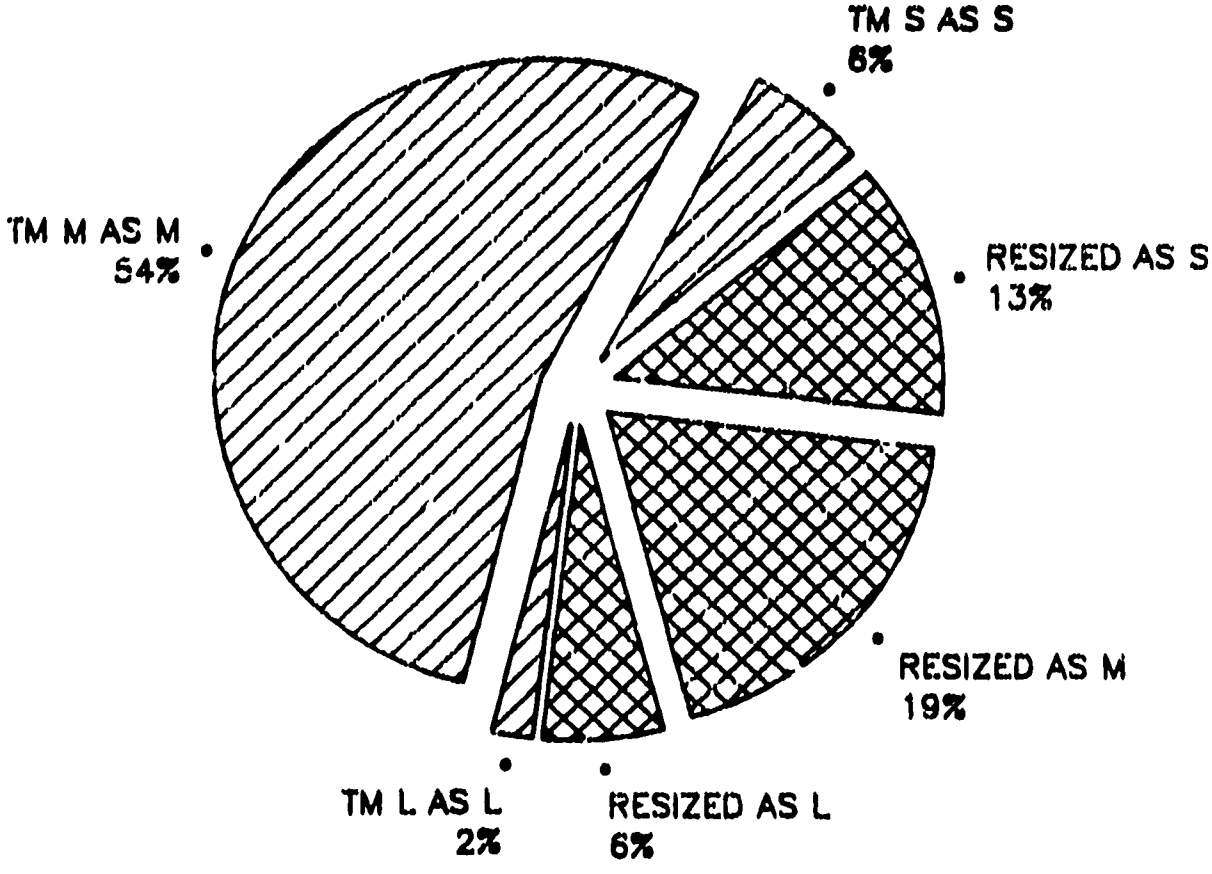
METHOD 11

SIZE DETERMINATION
US-10 SIZE LINE ANALYSIS



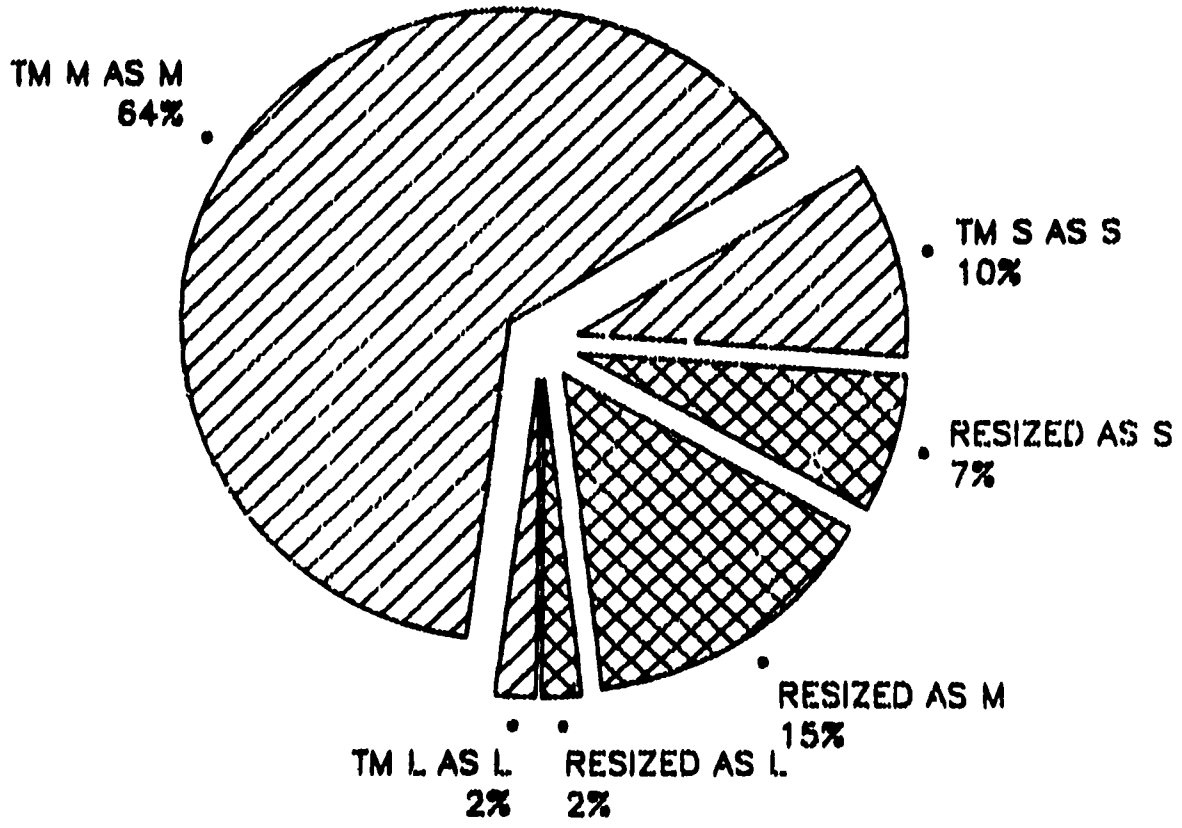
METHOD 12

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



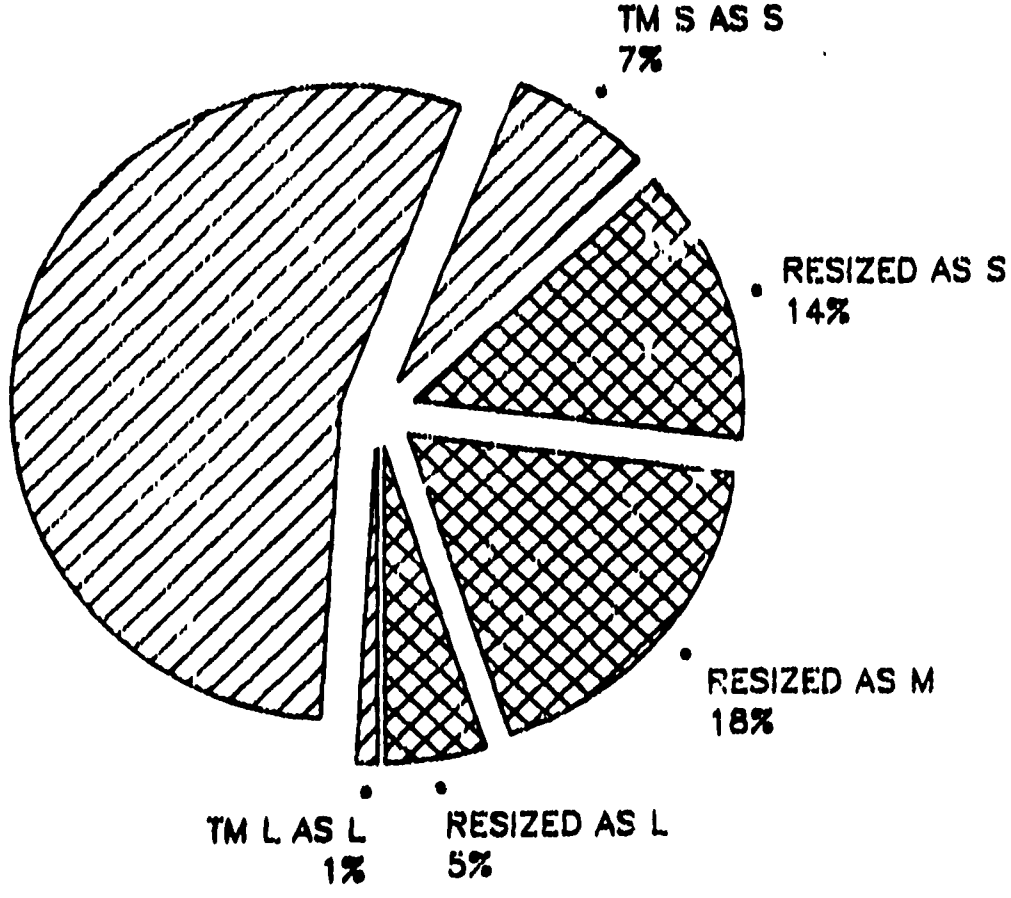
METHOD 13

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



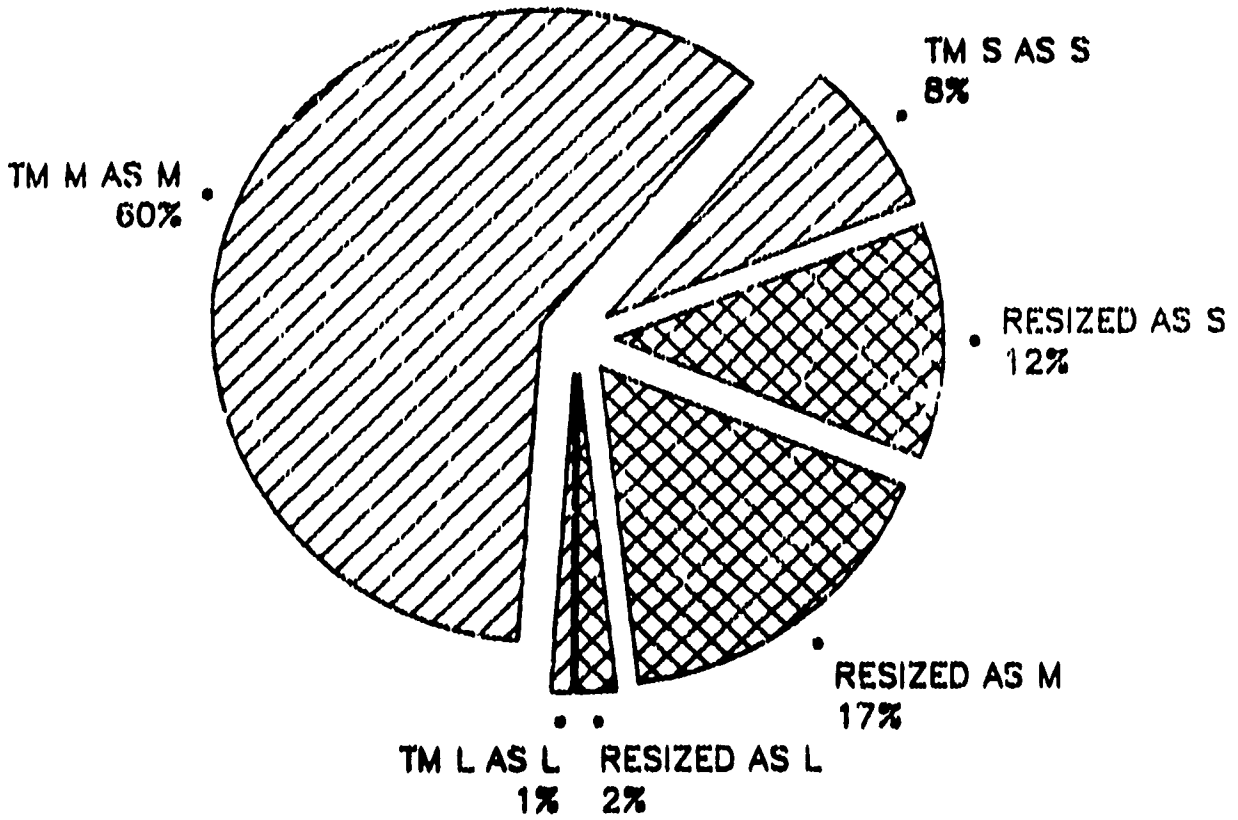
METHOD 14

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



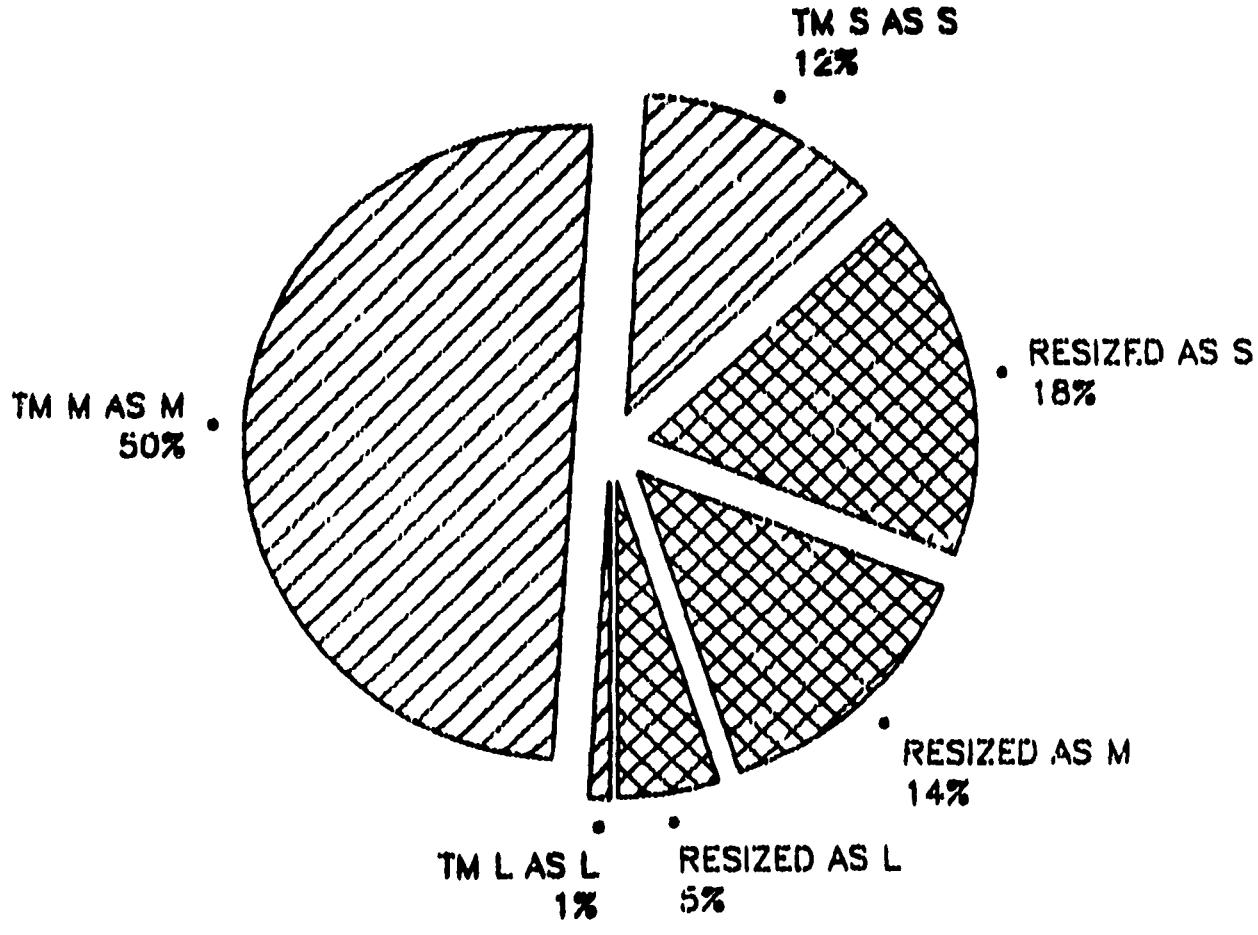
METHOD 15

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



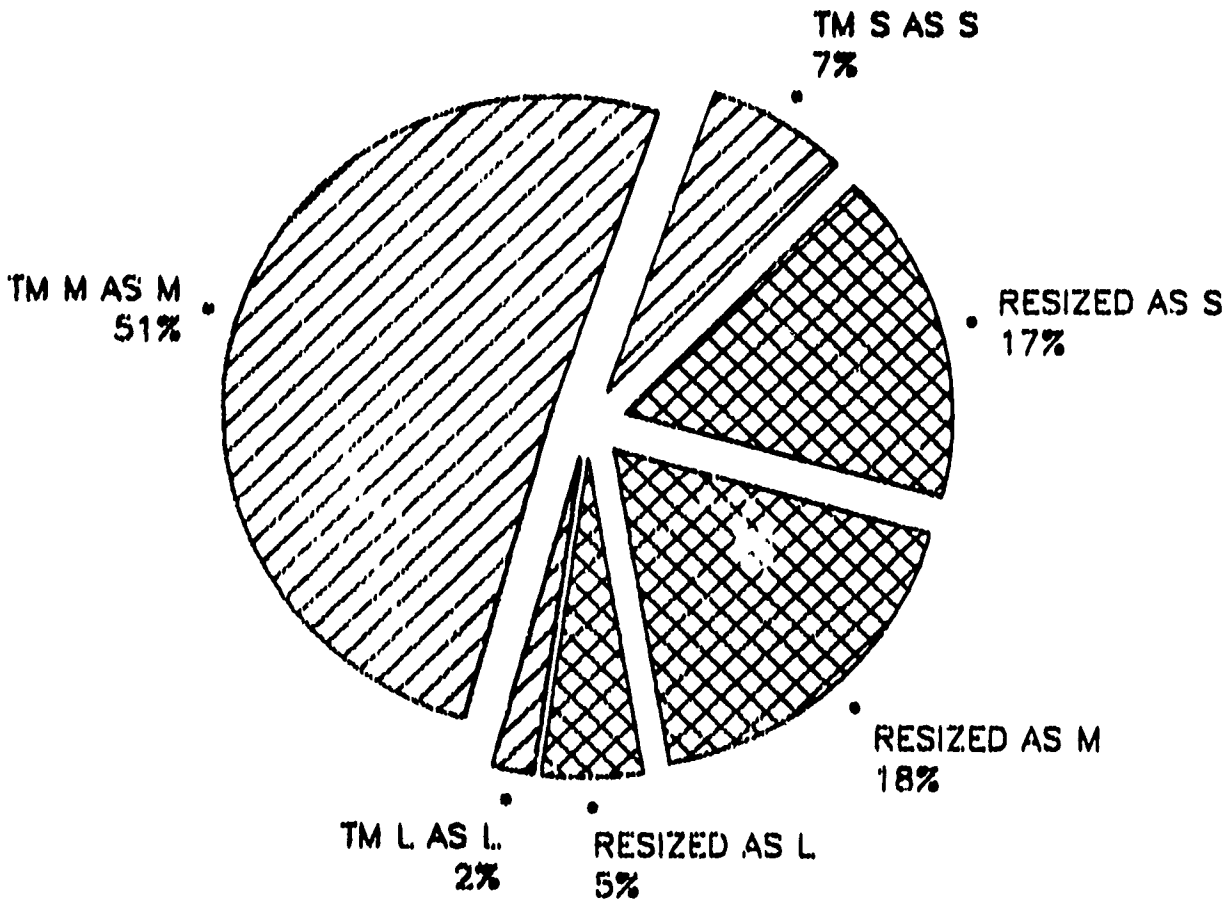
METHOD 16

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



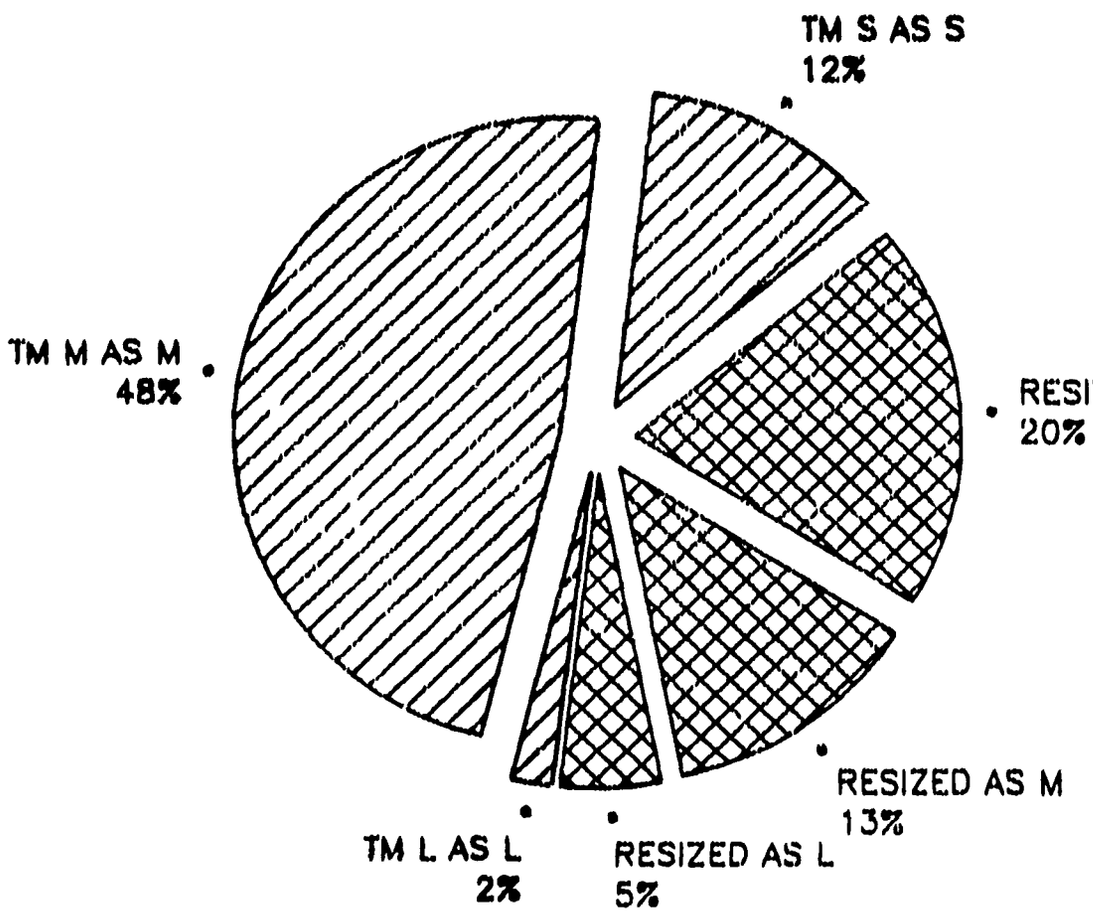
METHOD 5+6

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



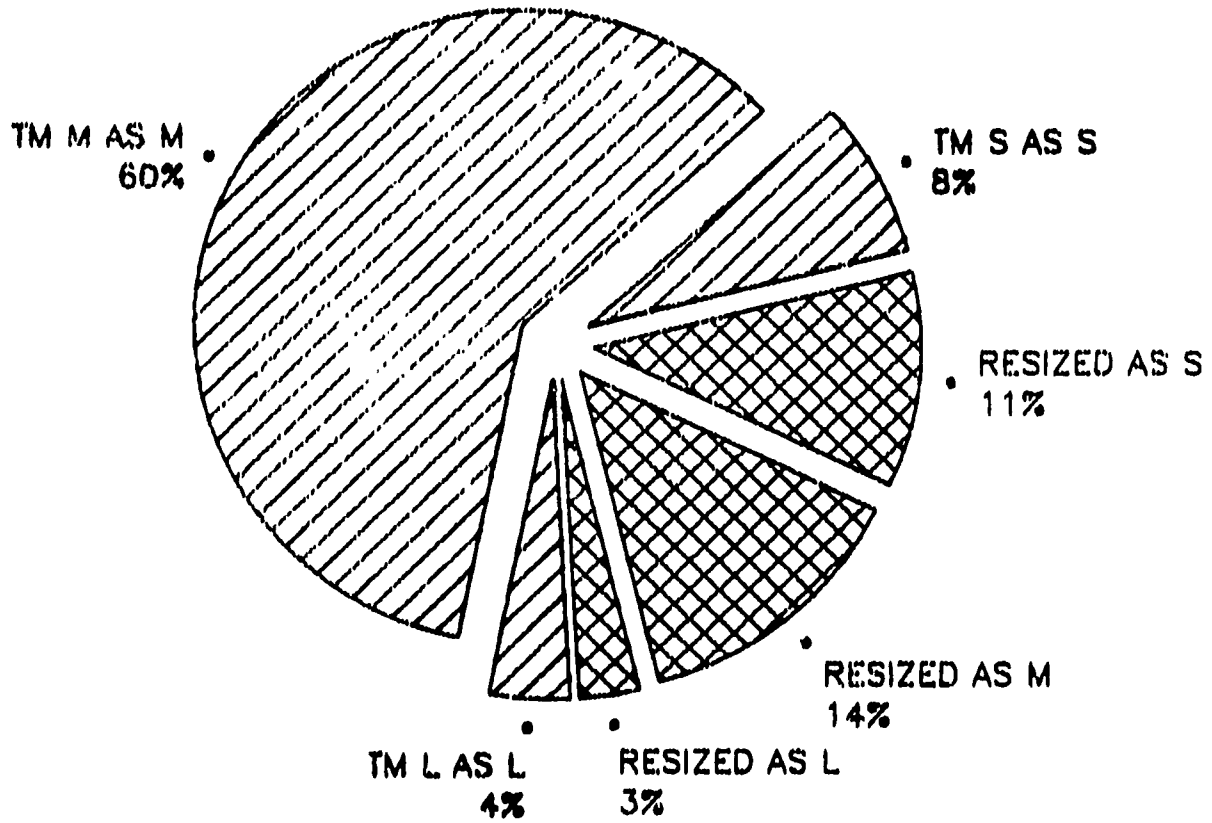
METHOD 9+10

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



METHOD 12+1/2(6)

SIZE DETERMINATION
US–10 SIZE LINE ANALYSIS



METHOD 14+16